

SERVICE MANUAL

Korg
Concert Piano

C-303/C-505

CONTENTS

1. SPECIFICATIONS	1
2. VIEWS	2
3. BLOCK DIAGRAM	12
4. CIRCUIT DIAGRAM	13
5. P.C. BOARDS	17
6. TEST MODE	22
7. REFERENCE DATA	28
8. PARTS LIST	44

KORG

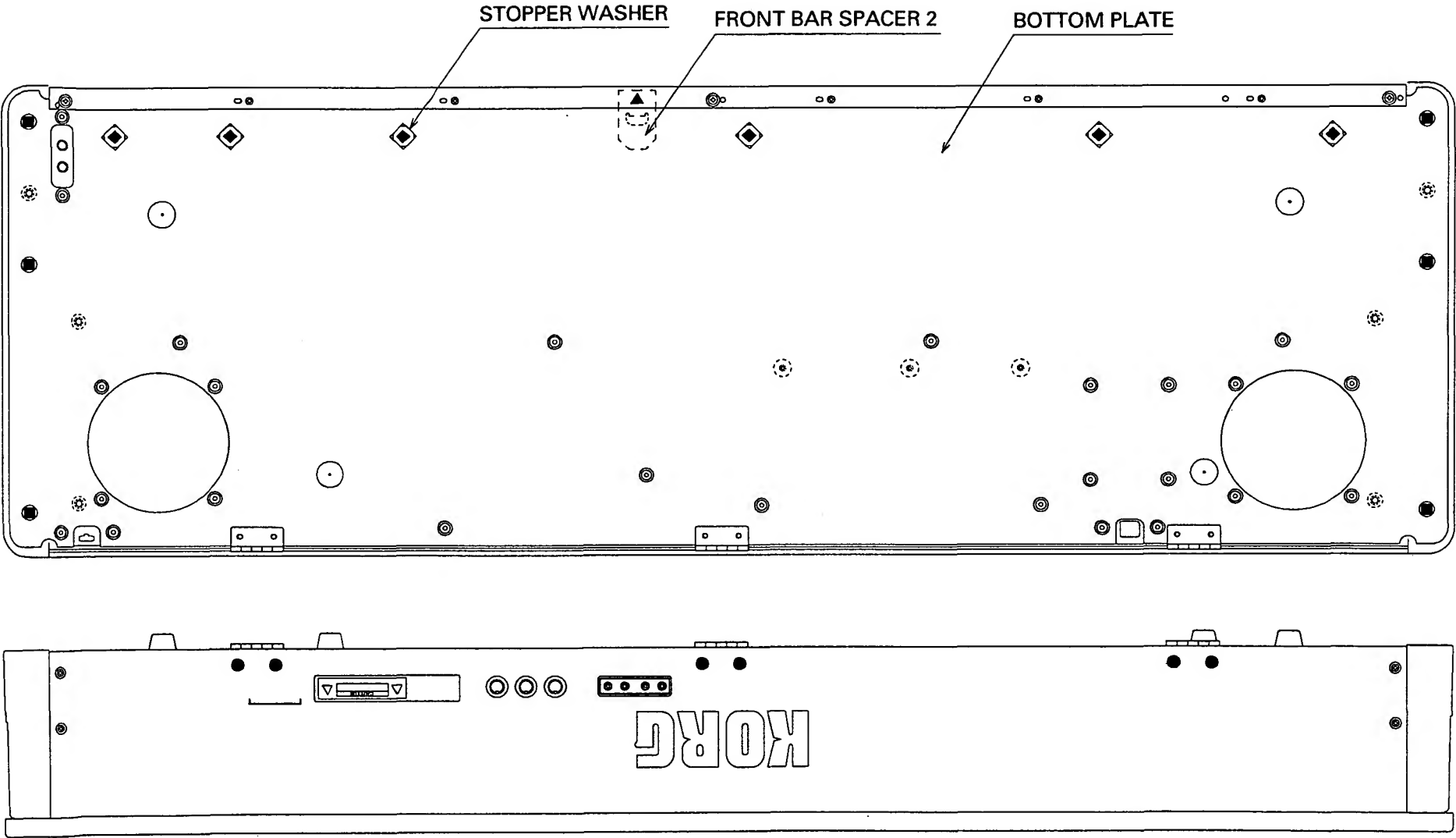
1. SPECIFICATIONS

Keyboard	:	88keys(A0 - C8)
CPU	:	uPD70433GD V55PI(master clock 12.5MHz)
Program ROM	:	2Mbit × 1
Data RAM	:	256Kbit× 1
Sound source	:	MBCS35104 TGL(master clock 32MHz) PCM data ROM 16bit× 1Mword Polyphony 32 notes
Tones	:	PIANO, E.PIANO, HARPSI, VIBES, ORGAN, STRINGS
Effects	:	SURROUND(ROOM, HALL), EFFECT(CHORUS, TREMORO), BRILLIANCE
Controls	:	POWER SW, VOLUME, MIDI/TRANPOSE, SPLIT, (LAYER)
Recorder	:	TRACK1, TRACK2, REPERT, RECORD, START/STOP, METRONOME, TEMPO total recording capacity; 2,600 notes maximum
Input terminals	:	AUX IN(L, R)
Output terminals :	:	AUX OUT(L, R), HEADPHONES× 2
MIDI	:	IN, OUT, THRU
Pedals	:	DAMPER, SOFT, SOSTENUTO
Main amplifire	:	30W× 2
Speakers	:	16cm× 2
Power consumption:	:	80W(100V), 90W(117V, 230V, 240V)
Dimensions	:	C-303; 1,382mm(W)× 456.5mm(D)× 818.5mm(H)
(with stand)	:	C-505; 1,382mm(W)× 456.5mm(D)× 838.5mm(H)
Weight	:	C-303; 55.4kg
(with stand)	:	C-505; 60.3kg
Mounts	:	Wooden keycover, Wooden music stand

* Specifications and design are subject to change without notice
for the purpose of product enhancement.

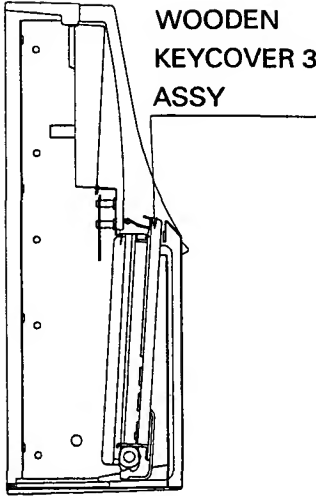
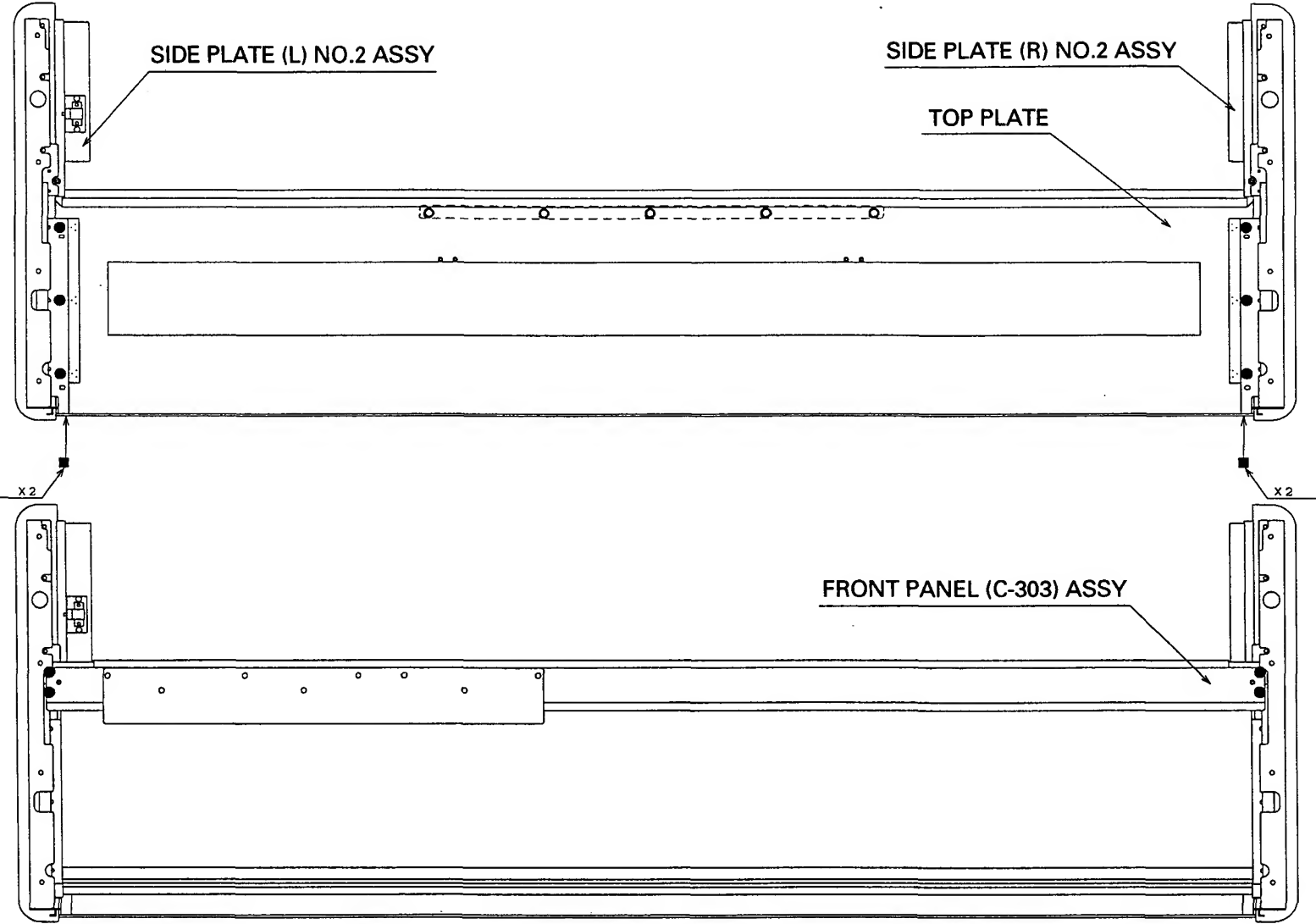
WHOLE ASSY

2. VIEWS



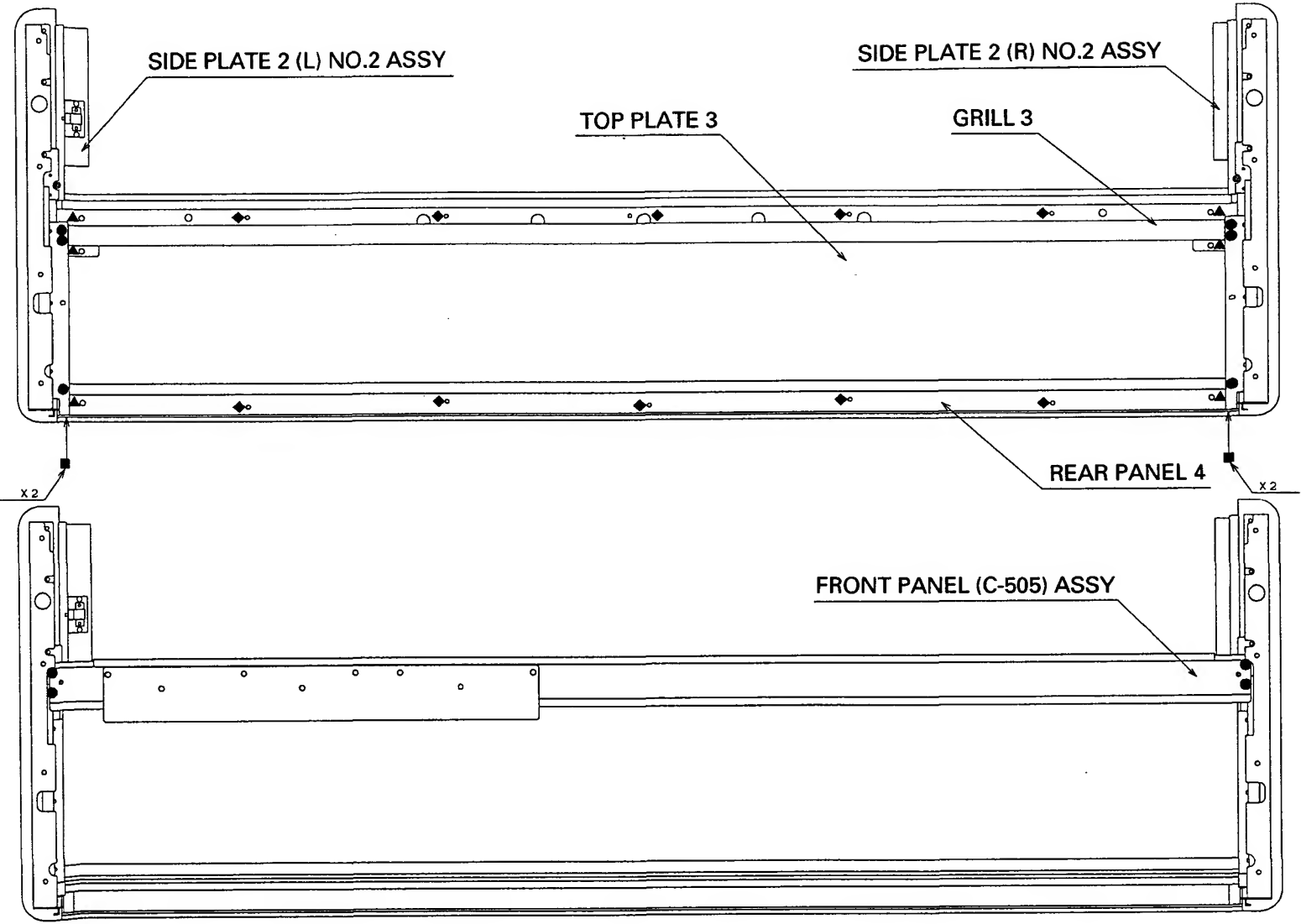
▲	FE FEW BZMC 4X18	1
◆	FE WSE1 BZMC 5X25 + STOPPER	6
■	FE WSE1 BZMC 5X25	6
●	BT B BZMC 3X8	6
MARK	SCREWS	Q'TY

TOP PLATE ASSY FOR C-303



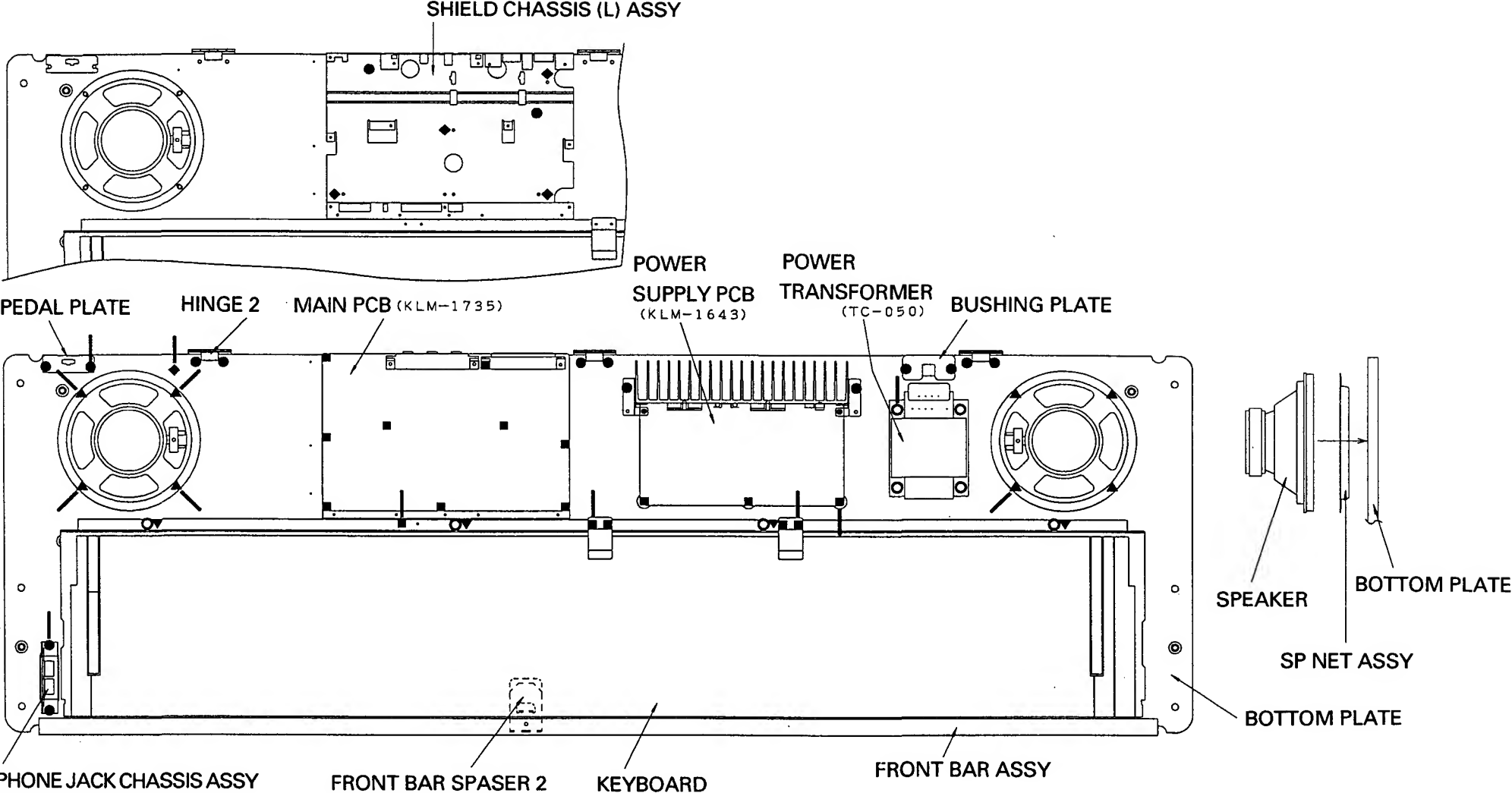
■	TP2G FFW BZMC 3X8	4
●	BT B BZMC 3X8	10
MARK	SCREWS	QTY

**TOP PLATE ASSY
FOR C-505**



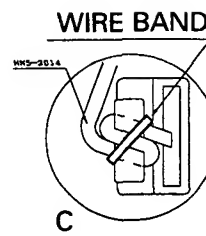
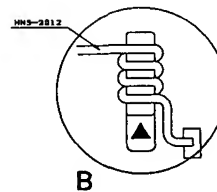
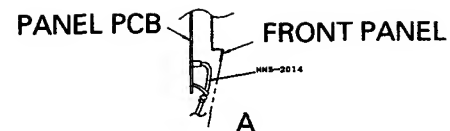
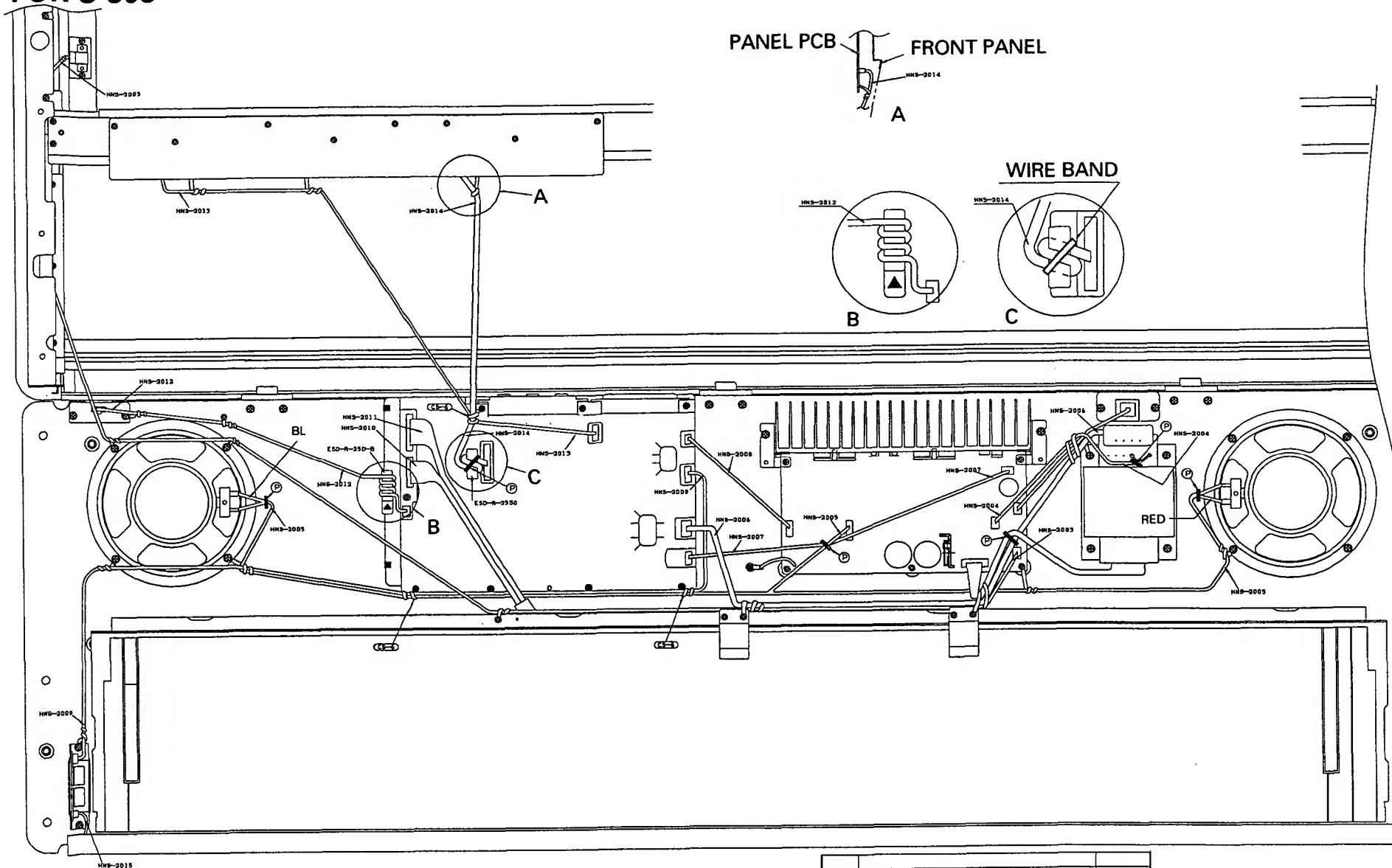
◆	TP1 B BZMC 3X10	10
▲	TP1 FEW ZMC 4X12	6
■	TP2G FEW BZMC 3X8	4
●	BT B BZMC 3X8	10
MARK	SCREWS	Q'TY

BOTTOM PLATE ASSY



■	CT B ZMC 3X8	17
▼	TP1 B BZMC 3.5X12	4
◆	TP1 B BZMC 3X10	5
▲	FE WSE1 ZMC 4X25	8
○	NLFE FEW BZMC 4X14	8
●	FE FEW BZMC 4X14	16
MARK	SCREWS	QTY

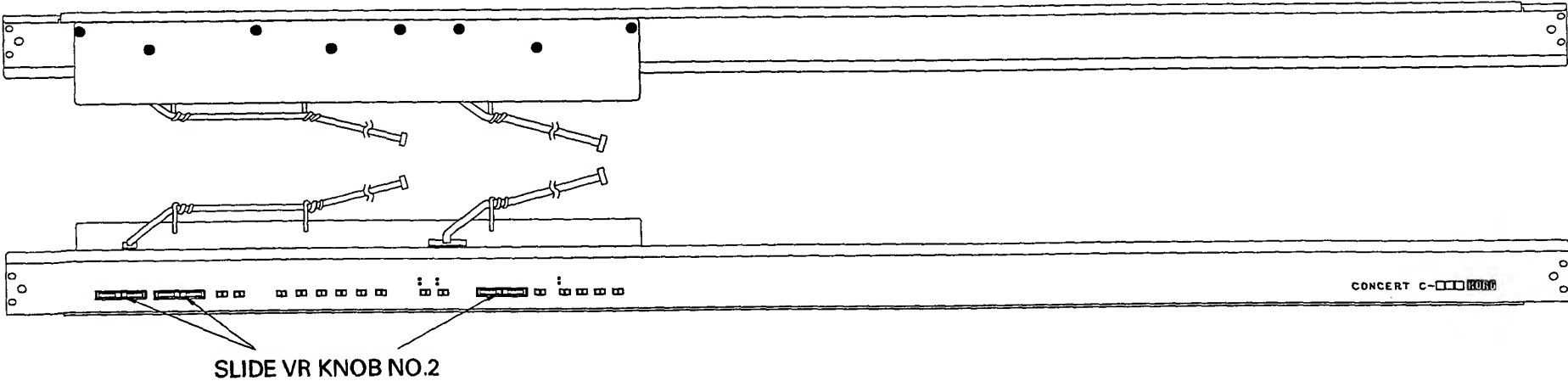
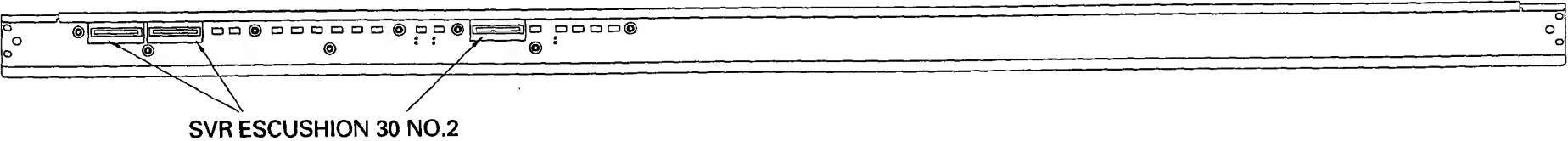
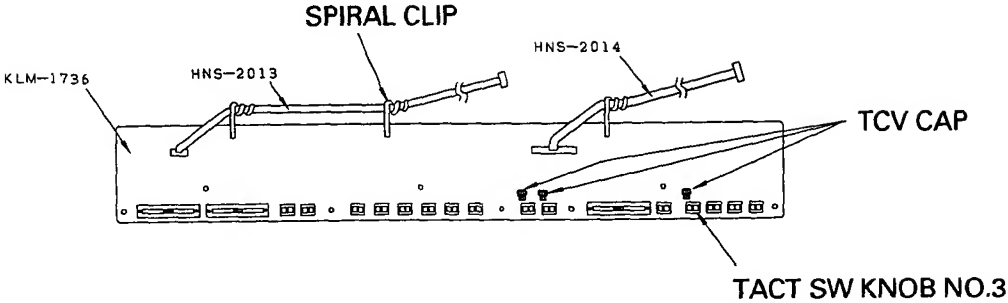
HARNESS CONNECTIONS FOR C-303



▲	TP1 FEW ZMC 3X14	1
■	TP1 B BZMC 3X10	3
●	CT B ZMC 3X8	7
MARK	SCREWS	Q'TY

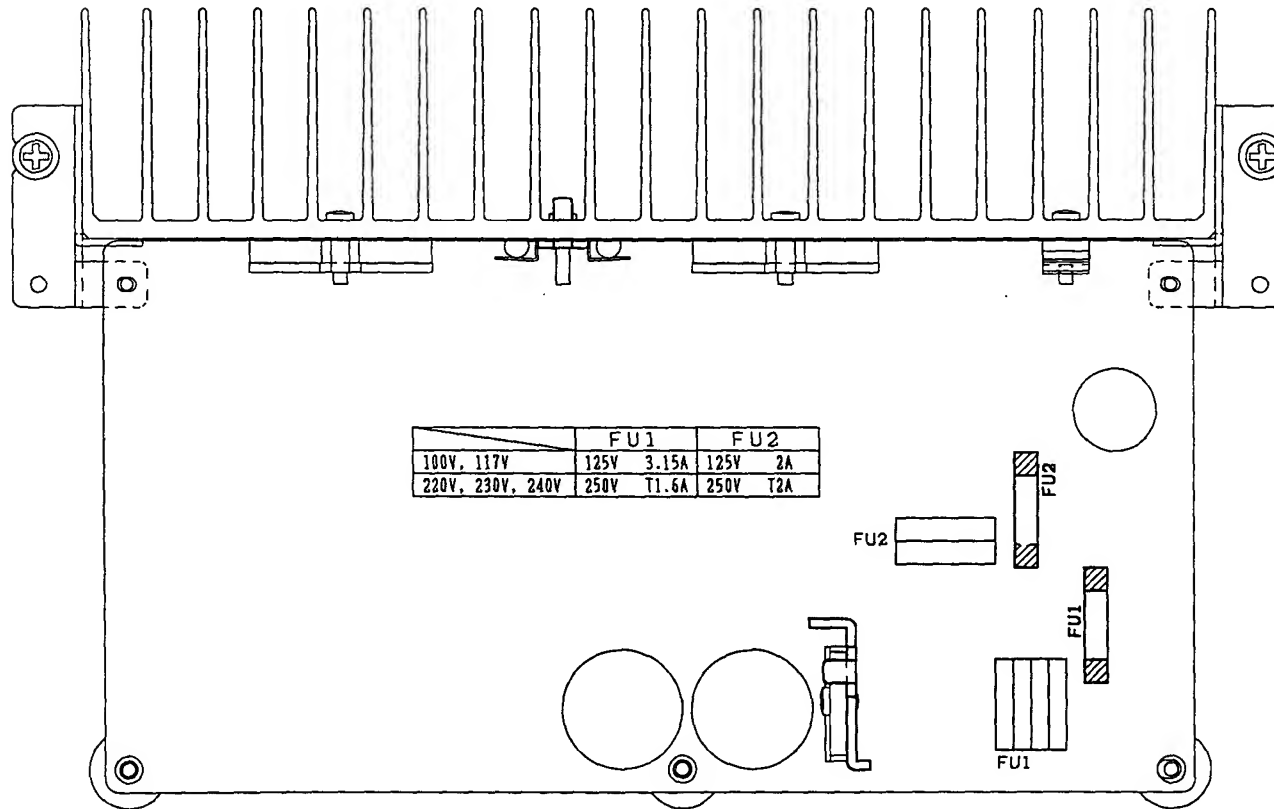
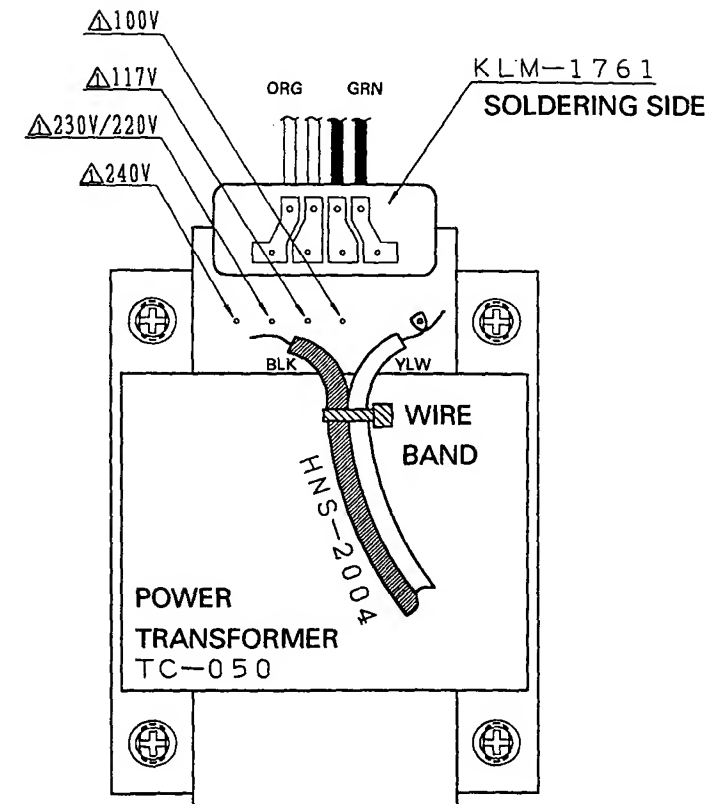
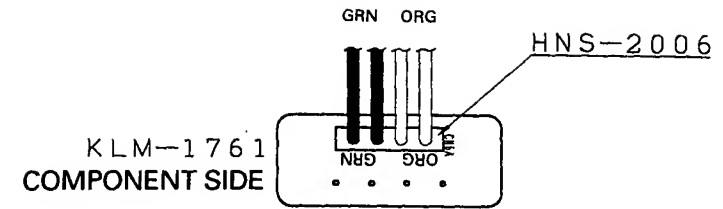
▲	TP1 FEW ZMC 3X14	1
■	TP1 B BZMC 3X10	3
●	CT B ZMC 3X8	7
MARK	SCREWS	Q'TY

FRONT PANEL ASSY



●	BT B ZMC 3X6	8
MARK	SCREWS	Q'TY

POWER SUPPLY UNIT ASSY **(Cautions for fuse and soldering of Power Transformer)**

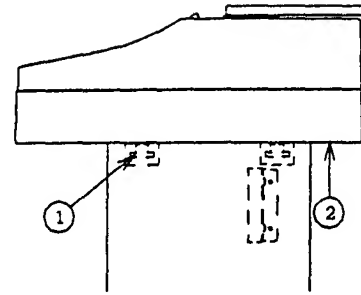
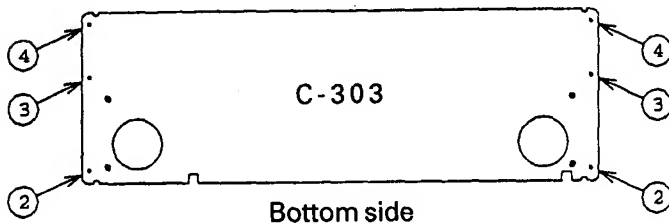


Opening the Top Panel Assy's while it is setting on the stand

For C-303

1. Loosen the 4 knob bolts ①, and slide the piano backward about 50mm. Remove the screws ② (on the right and left) which secure the bottom and side panels.

Note: 6 screws ②, ③ and ④ securing the bottom and side panels. See the figure below.

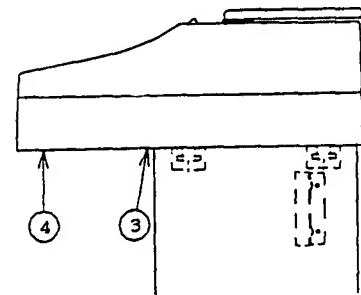


Note: The screws ②, ③ and ④ securing the bottom and side panels are;
FE WSE1 BZMC 5×25.
The knob bolts ① are;
KT-B2 M6×25.

2. Return the piano to its original position, and tighten the knob bolts. Remove the screws ③ and ④ securing the bottom and side panels.

The top panel Ass'y is now open with the stand set-up.

Securing the Side and Top panel Ass'y with the Ass'y open(An example).

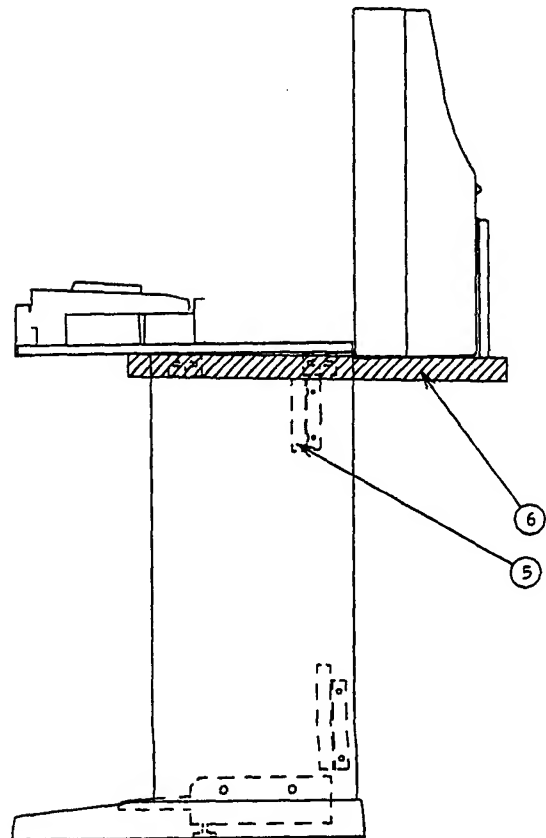


3. Set the support ⑥ located between the bottom plate and stand slide plate ⑤(dimensions: 30mm×30mm×500mm) in one position in the center of the stand and secure it as shown in figure on the right.

Note1: Be careful not to scratch the wood on the piano and stand slide plate.

Note2: The Ass'y should be secured with the key cover open(the key cover is inside the piano).

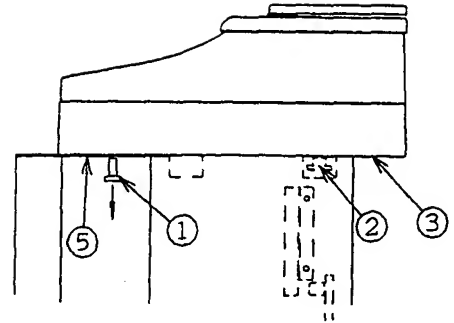
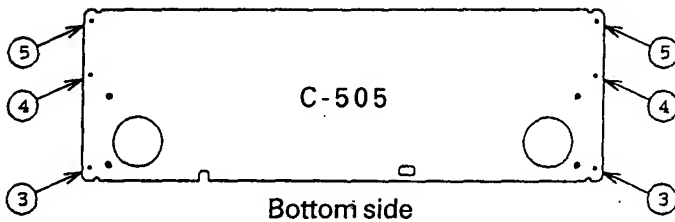
Note3: The Ass'y should always be secured with the knob bolts tightened.



For C-505

1. Remove 2pcs. of the Joint-connector bolts ① and loosen 2pcs. of the knob bolts ②, then slide the piano backward about 50mm. Remove 4pcs. of the screws ③ and ⑤ (on the right and left) which secure the bottom and side panels.

Note: 6 screws ③, ④ and ⑤ securing the bottom and side panels. See the figure below.

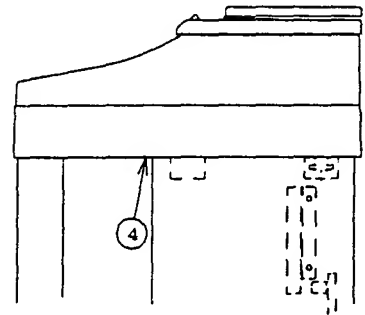


Note: The screws ③, ④ and ⑤ securing the bottom and side panels are;
FE WSE1 BZMC 5×25.
The joint-connector bolts ① are;
JBA-0220M M6×16
The knob bolts ② are;
KT-B2 M6×25.

2. Return the piano to its original position, and tighten the knob bolts. Remove 2pcs. of the screws ④ securing the bottom and side panels.

The top panel Ass'y is now open with the stand set-up.

Securing the Side and Top panel Ass'y with the Ass'y open (An example).

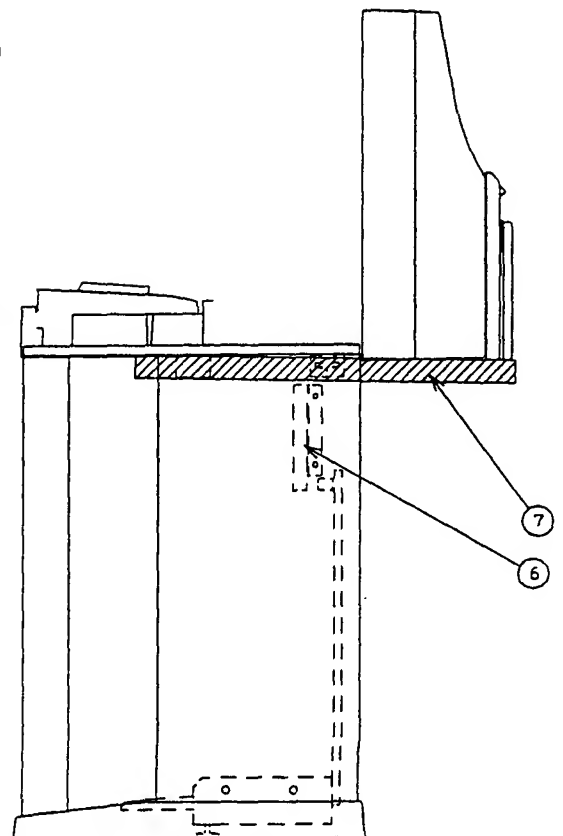


3. Set the support ⑦ located between the bottom plate and stand slide plate ⑥ (dimensions: 30mm×30mm×500mm) in one position in the center of the stand and secure it as shown in figure on the right.

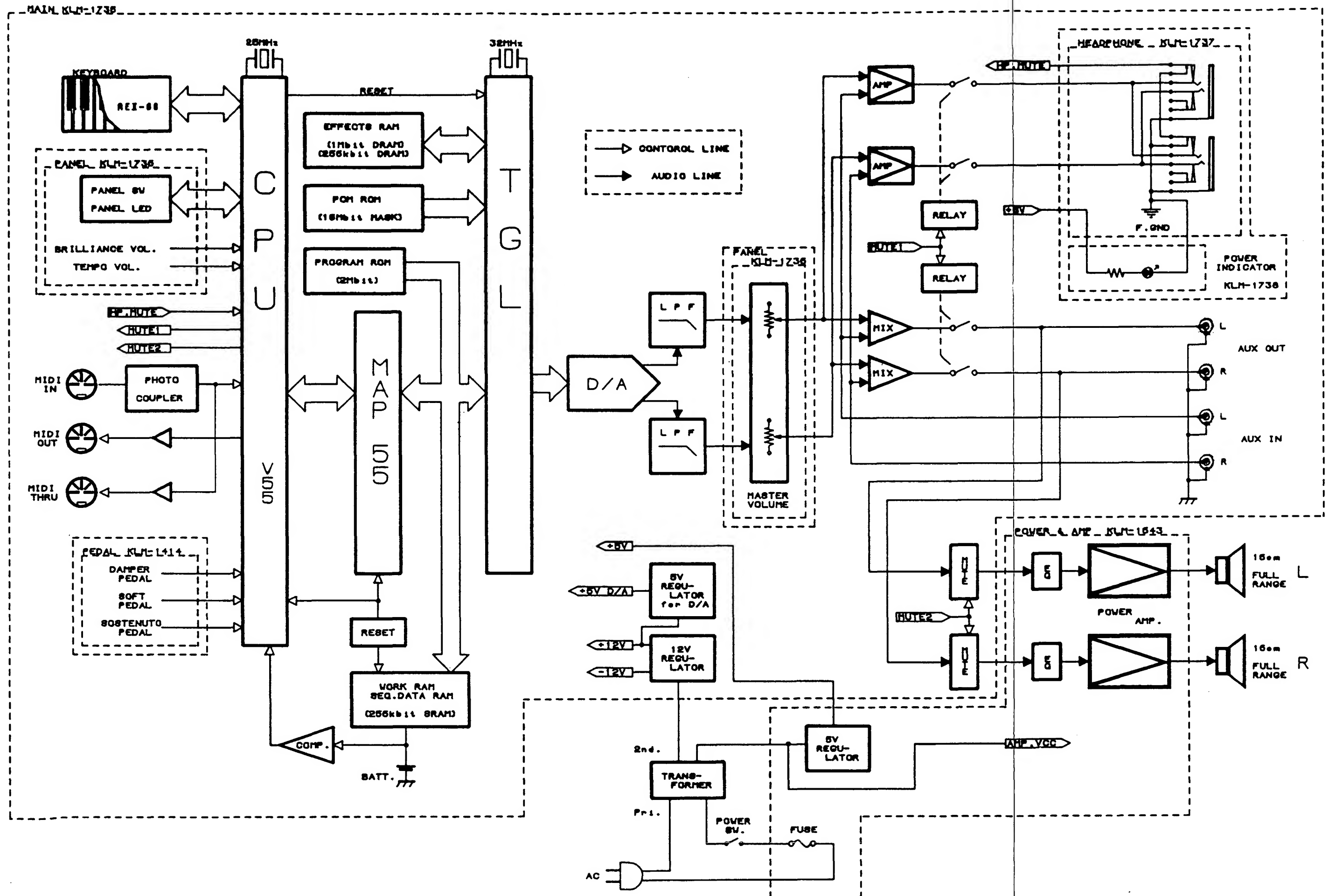
Note1: Be careful not to scratch the wood on the piano and stand slide plate.

Note2: The Ass'y should be secured with the key cover open (the key cover is inside the piano).

Note3: The Ass'y should always be secured with the knob bolts tightened.

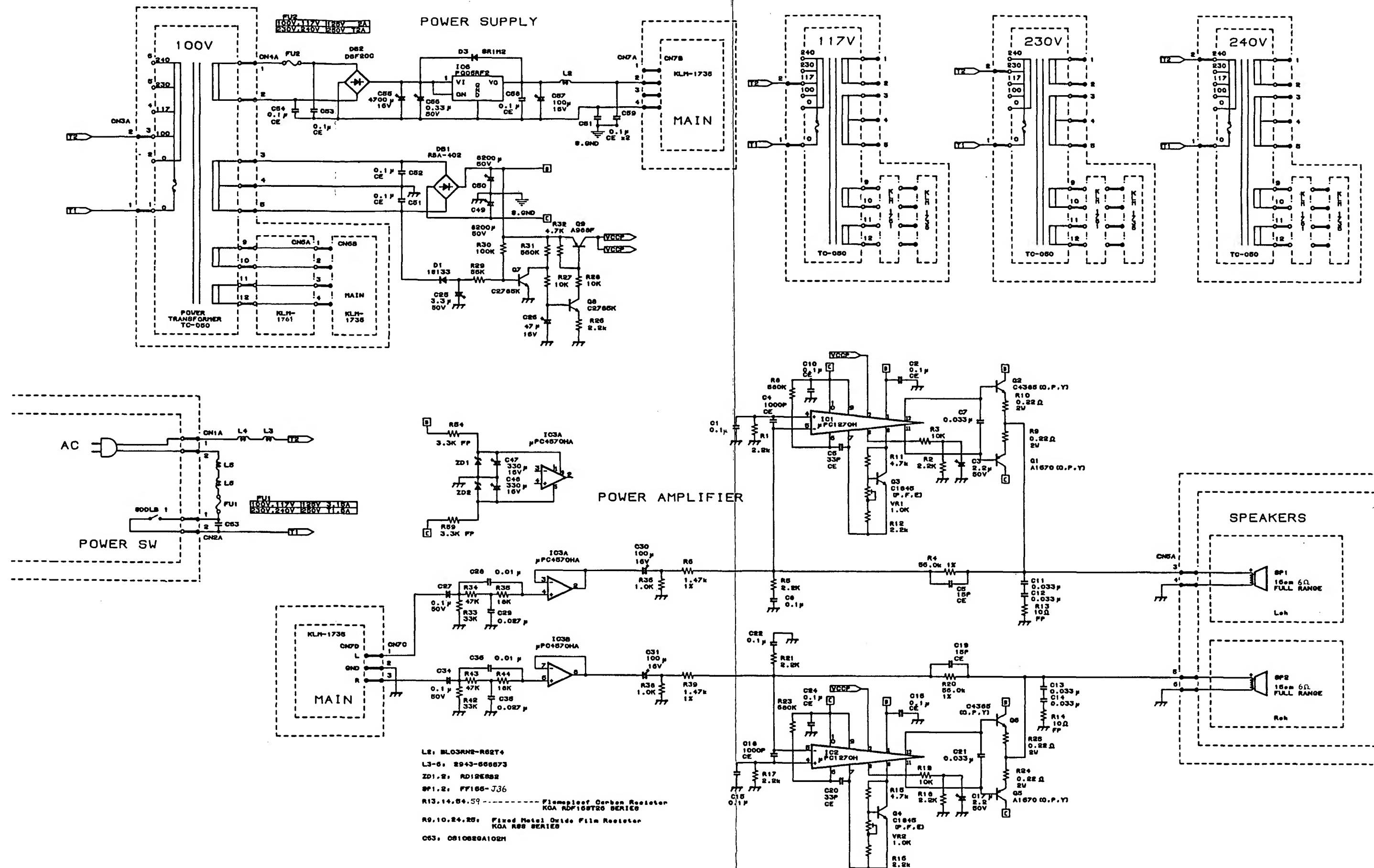


3. BLOCK DIAGRAM

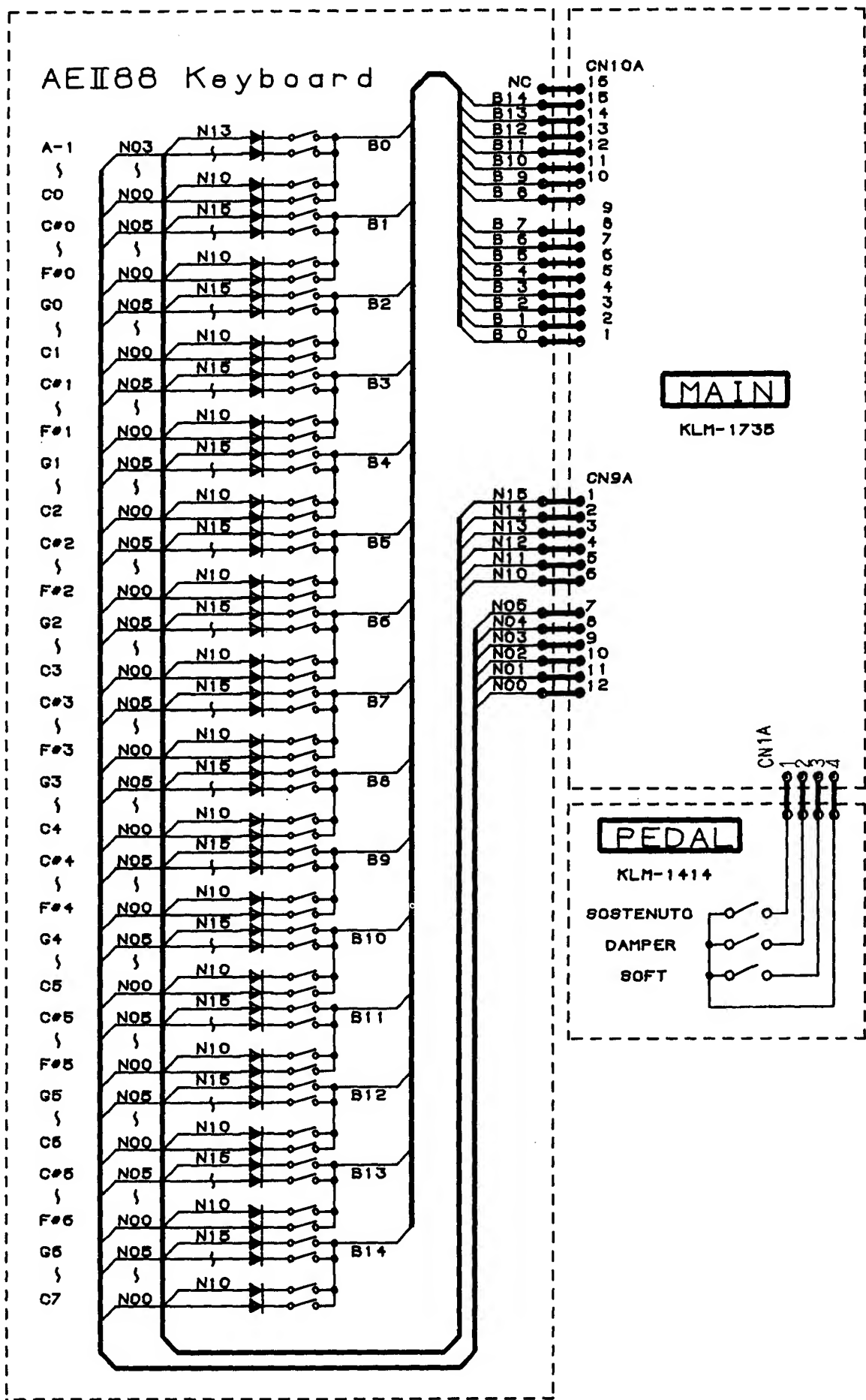


4. CIRCUIT DIAGRAM

KLM-1643

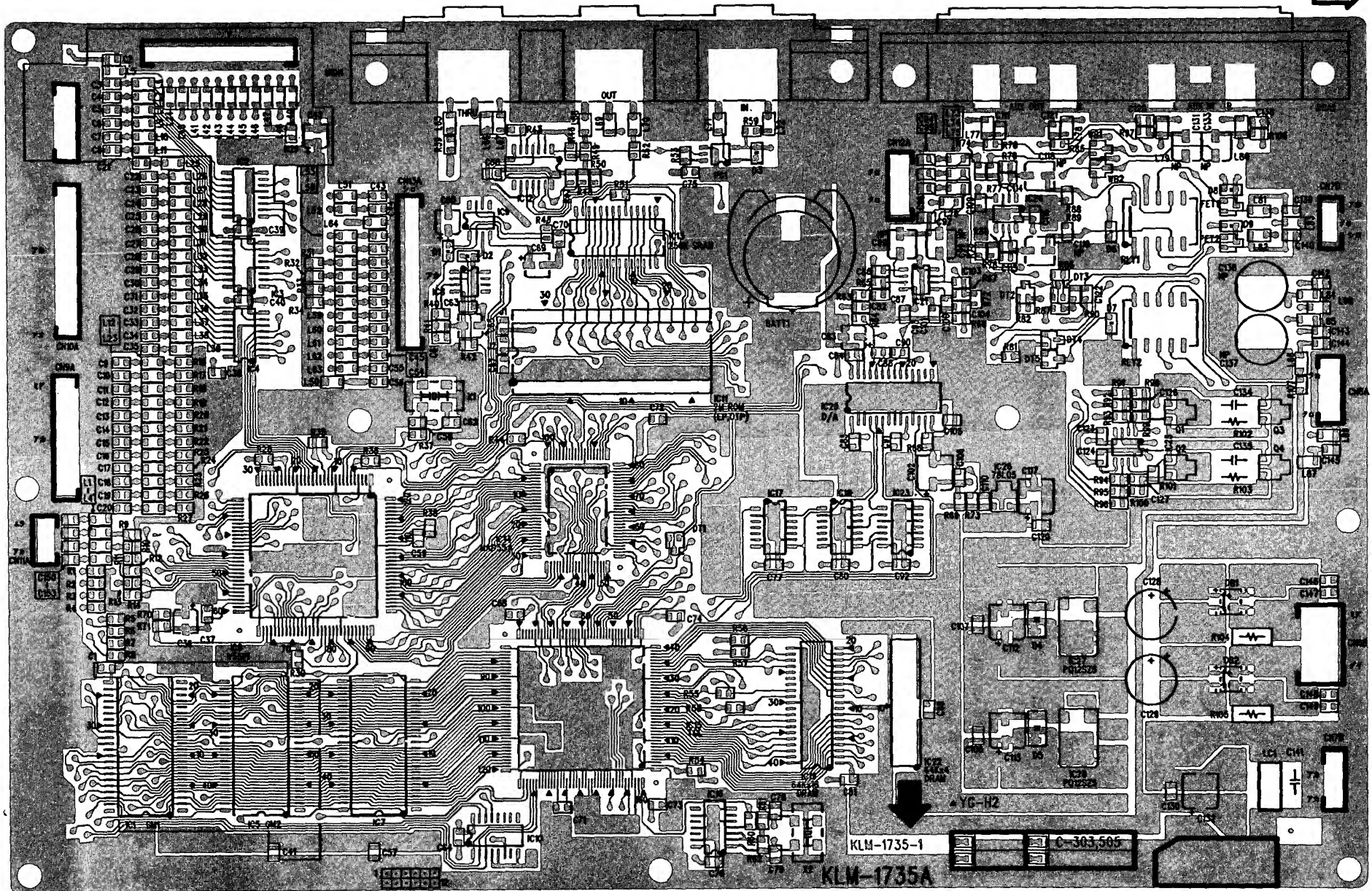


KEYBOARD/KLM-1414



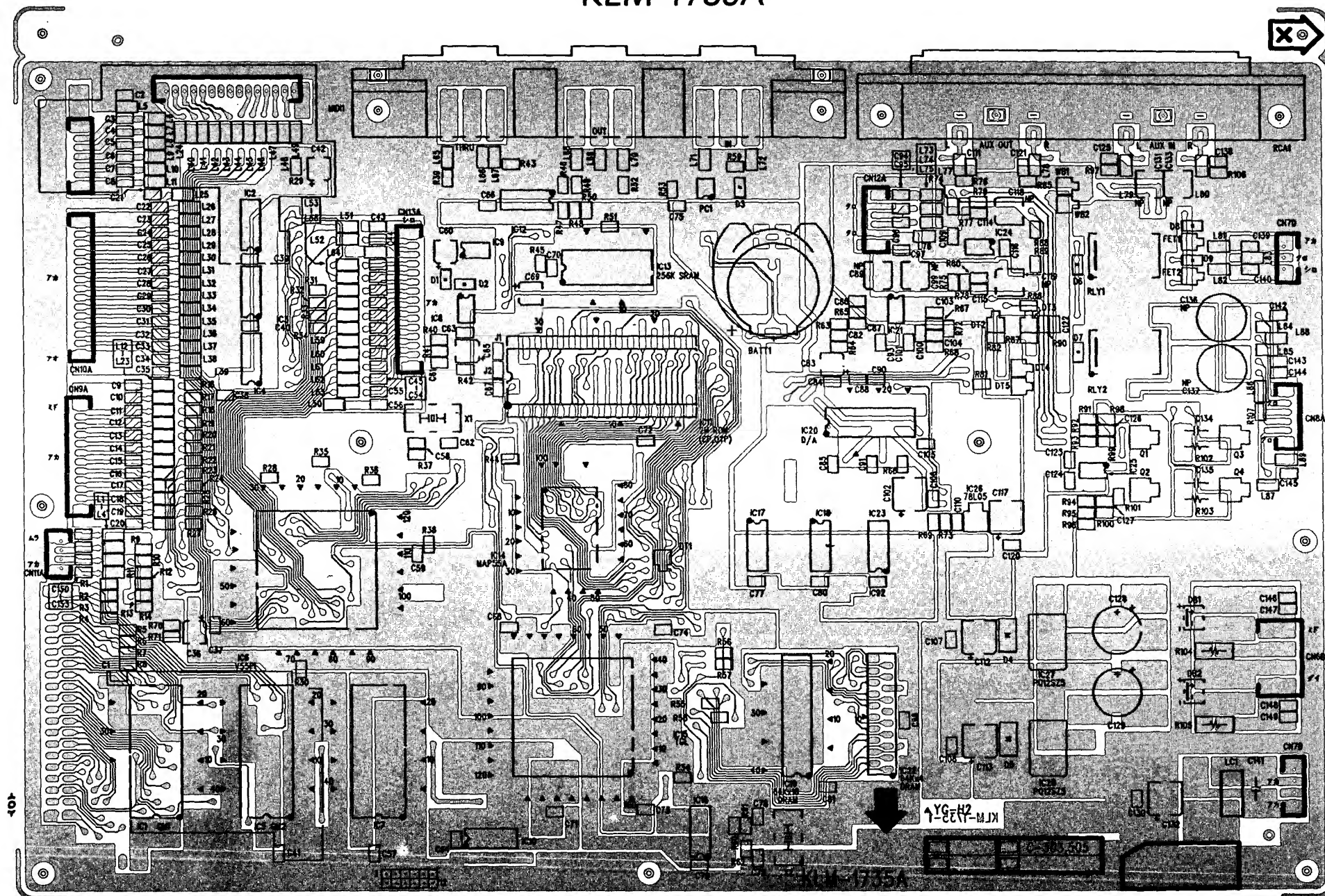
5. P.C. BOARDS

KLM-1735A



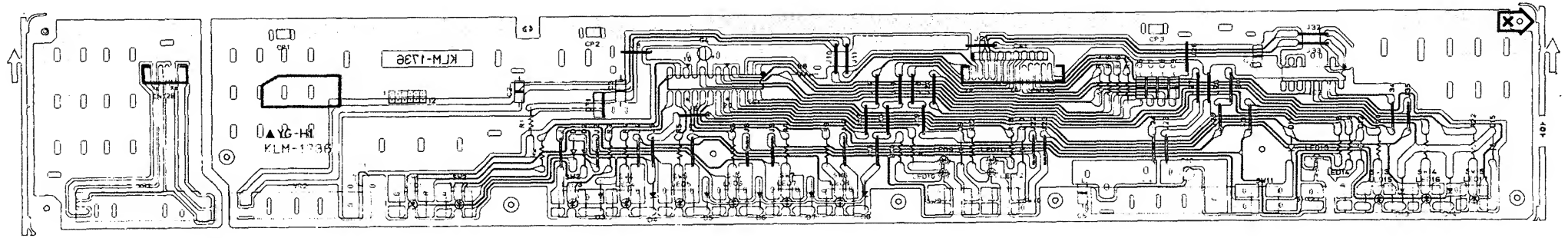
COMPONENT SIDE

KLM-1735A

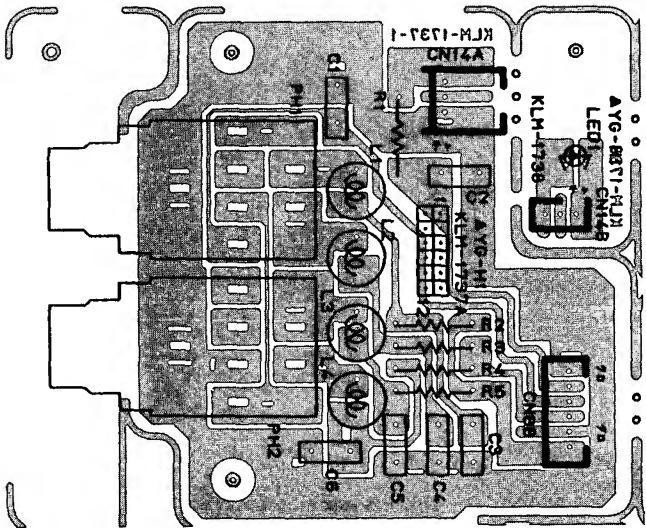


NO COMPONENT SIDE

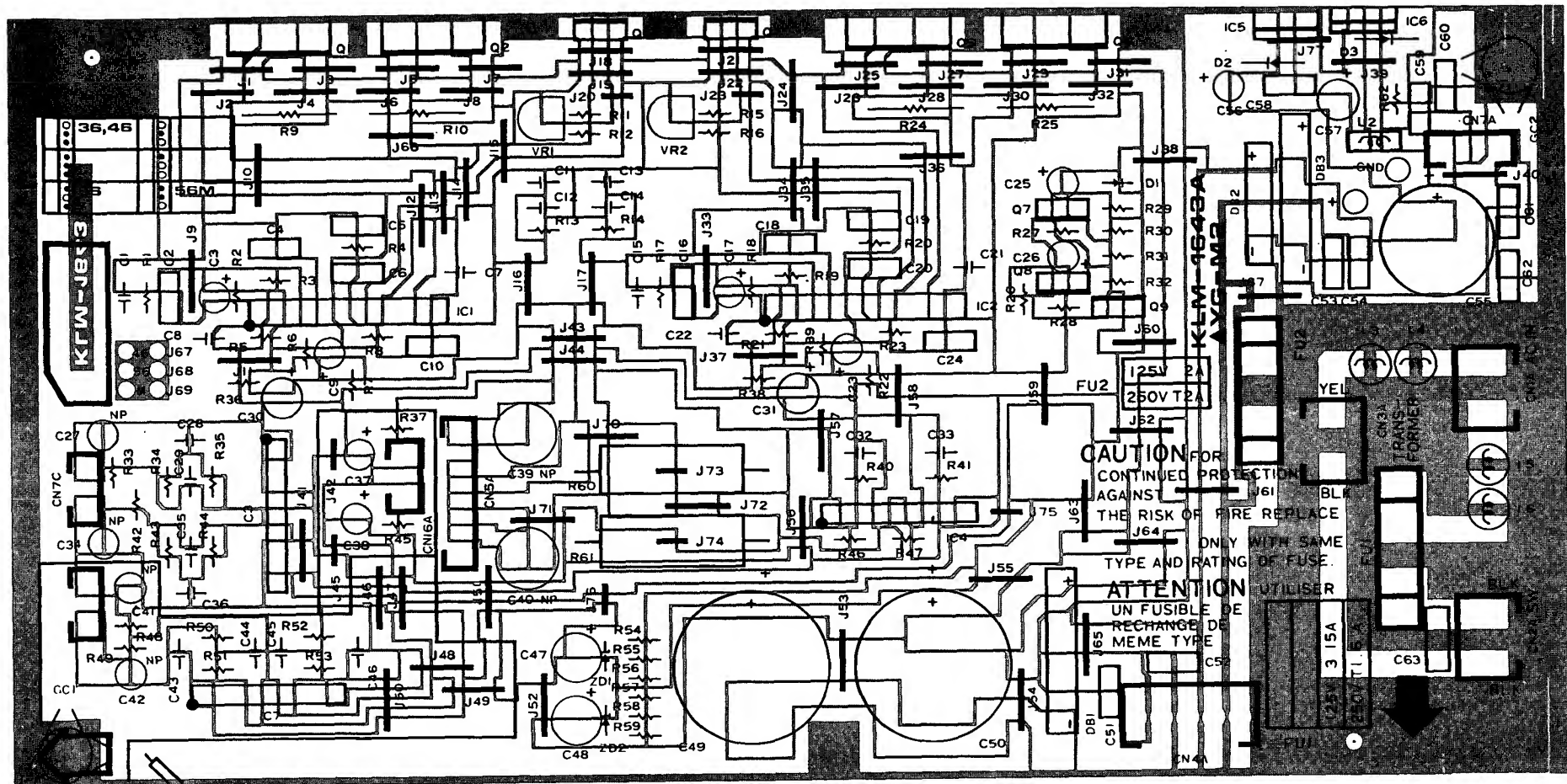
KLM-1736



KLM-1737/1738



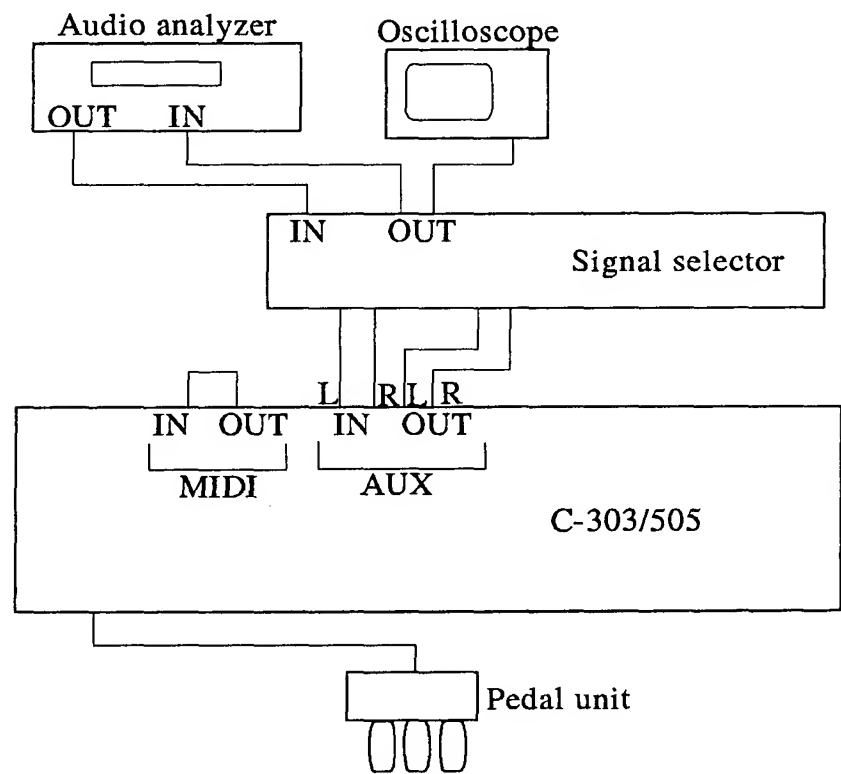
KLM-1643A



6. TEST MODE

The C-303/505 is provided with the test mode for checking each function at the time of shipment from the factory. The internal RAM data is initialized when the test mode is started up. If there are user data or any other necessary data, save them into the MIDI data filer beforehand.

Standard setting



* Test Mode Operation Method

(1) Start-up

Turn the power ON while depressing "MIDI/TRANPOSE" and "SPLIT" to start up the test mode. When the test mode starts, MIDI/TRANPOSE, SPLIT, PIANO, HARPSI, VIBES, ORGAN, STRINGS, ROOM, HALL, CHORUS, TREMOLO, 1, 2, RECORD, START/STOP and REPEAT LEDs blink once, one at a time, in this order.

Supplement:

When the power is turned ON while depressing "MIDI/TRANPOSE" and "PIANO", the test mode starts from the panel SW & VR test. (Use this method to skip the internal test.)

Turn the power ON while depressing "SPLIT" and "PIANO" to start the test mode from the MDE function test. (Use this method to skip from internal to HEADPHONE MUTE tests.)

(2) Operating switches

MIDI/TRANPOSE	: Press this switch to transpose from the test mode to the ordinary mode.
PIANO	: Press this switch to proceed to the next test step.
E.PIANO	: Press this switch to proceed to the next test item.
STRINGS	: Press this switch to return to the preceding test item.

1. Internal Test

(1) System ROM check

Checks all data in the system ROM and stops with the "PIANO" LED blinking upon detection of an error.

(2) S-RAM check

Checks SRAM write/read operation and stops with the "E.PIANO" blinking upon detection of an error.

(3) PCM ROM check

Checks all data in the PCM ROM and stops with the "MIDI/TRANPOSE" and "PIANO" LEDs blinking upon detection of an error.

(4) TGL TG block check

Checks the TG block operation and stops with the "HARPSI" LED blinking upon detection of an error.

(5) TGL VDFA block check

Checks the VDFA block operation and stops with the "VIBES" LED blinking upon detection of an error.

(6) MIDI IN/OUT check

Performs the MIDI IN/OUT loop test.

Time out error : The execution stops with the "ORGAN" LED blinking.

(7) Internal battery check

Checks the internal battery voltage.

For insufficient voltage : Stops with the "STRINGS" and "RECORD" LEDs blinking.

For excessive voltage : Stops with the "STRINGS" and "START/STOP" LEDs blinking.

Automatic transition to the next test occurs upon normal completion of the internal test.

2. Panel SW/VR/LED check

See that all LEDs on the panel are lit and press the PIANO switch to proceed to the next step.

During the VR inspection, the corresponding VR position is indicated by six LEDs: "PIANO" to "STRINGS".

Operate each VR in the order of minimum -> maximum -> minimum.
Automatic transition to the next step occurs upon normal completion of the check.

The checking order is as follows:

"BRILLIANCE"VR, MIDI/TRANPOSE, SPLIT, PIANO, E.PIANO, HARPSHI, VIBES, ORGAN, STRINGS, SURROUND(ROOM), EFFECT(CHORUS), "TEMPO"VR, METRONOME(1), TRACK (2), RECORD, START/STOP, REPEAT

3. Pedal check

See that the MIDI/TRANPOSE LED on the panel is lit and the three following LEDs corresponding to the pedals are blinking:

SOFT = RECORD SOSTENUTE = START/STOP DAMPER = REPEAT

Each pedal lights up the corresponding LED when set to ON, and turns it off when set to OFF. If two pedals are set to ON at the same time, the execution stops with the corresponding LEDs in lit state.

Perform ON/OFF of the SOFT, SOSTENUTE and DAMPER in this order.
Automatic transition to the next test occurs upon completion of the DAMPER pedal check.

4. Keyboard Test

See that the SPLIT LED on the panel is lit. Hammer at the keyboard in the descending order from the highest-pitched key (C6) with a medium force.

If the key touch result is improper, the following LEDs are lit with alarm tone sounding:

Improper strength	: "SPLIT" and "START/STOP" LEDs are lit.
Touching a low-pitched key	: "SPLIT" and "RECORD" LEDs are lit.
Touching a high-pitched key	: "SPLIT" and "REPEAT" LEDs are lit.

Proceeding to the next key is impossible unless the correct result is obtained.

Automatic transition to the next test occurs upon completion of touching the lowest-pitched tone (A0).

5. Headphone Mute Check

See that the PIANO LED on the panel is lit, and that the RECORD LED comes on when the stereo plug is inserted to the HEADPHONE jack.

- * Always use a stereo type plug.

Press the "PIANO" switch with the plug inserted to proceed to the next test.

6. MDE Function Test

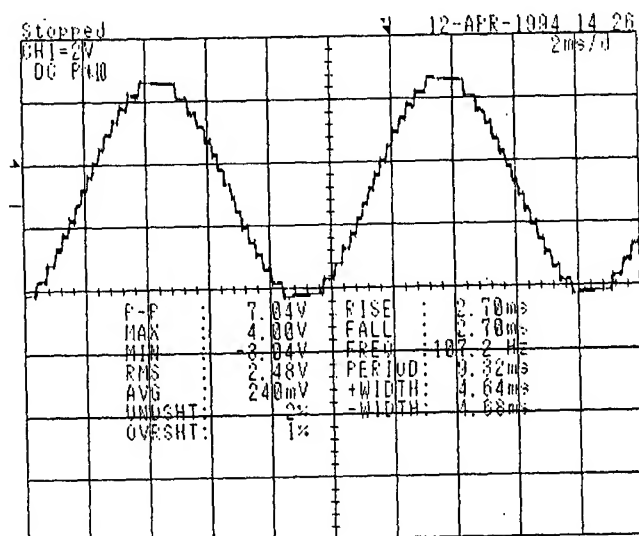
Set the master volume control to the maximum level.

See that the E.PIANO LED on the panel is lit and the MDE test waveform is output from the AUX L terminal.

No sound is output from the speaker.

- * Set the master volume control to about 1 when monitoring through the headphone.

MDE test waveform



If the output waveform is normal, proceed to the next test by pressing the PIANO switch.

7. Maximum Output Level Test

(Headphone load resistance = 33 Ω)

See that the HARPSI LED on the panel is lit. Press each test selection key shown below and check the output level of the corresponding channel. No sound is output from the speaker.

- * Set the master volume control to about 1 when monitoring through the headphone.

Test step	Output channel	Frequency(Hz)	Output level(dBu)	Selection key
①	AUX L	488	9.2~11.3	A0
②		Sine wave	No sound	B0
③	AUX R	412	9.2~11.3	C1
④		Sine wave	No sound	D1
⑤	PH1/L	548	10.3~12.6	E1
⑥		Sine wave	No sound	F1
⑦	PH1/R	610	10.3~12.6	G1
⑧		Sine wave	No sound	A2
⑨	PH2/L	732	10.3~12.6	B2
⑩		Sine wave	No sound	C2
⑪	PH2/R	854	10.3~12.6	D2
⑫		Sine wave	No sound	E2

After the end of the check, press the "PIANO" switch to proceed to the next check.

8. AUX IN Test

See that the VIBES LED on the panel is lit.

Input a sine wave at 1 kHz/4 dBu to AUX IN (L & R), and check the output signal level. No sound is output from the speaker.

- * Set the master volume control to about 1 when monitoring through the headphone.

Test step	Output channel	Output level (dBu)	Selection key
①	AUX L	10.5~12.8	A0
②	AUX R	10.5~12.8	B0

After the end of the check, press the "E.PIANO" switch to proceed to the next check.

9. Residual Noise check

(Headphone Load Resistance = 33 Ω)

See that the STRINGS LED on the panel is lit. Use an audio analyzer and check the residual noise in each output channel.

Test step	Output channel	Noise level (dBu)	Selection key
①	AUX L	less than -91	A0
②	AUX R	less than -91	B0
③	PH1/L	less than -91	C1
④	PH1/R	less than -91	D1
⑤	PH2/L	less than -91	E1
⑥	PH2/R	less than -91	F1

After the end of the test, press the "E.PIANO" switch to proceed to the next check.

10. Speaker Test

See that the STRINGS LED on the panel is lit.
Set the master volume control to about 1 when monitoring through the headphone.

Press each test selection key shown below for testing the speaker.

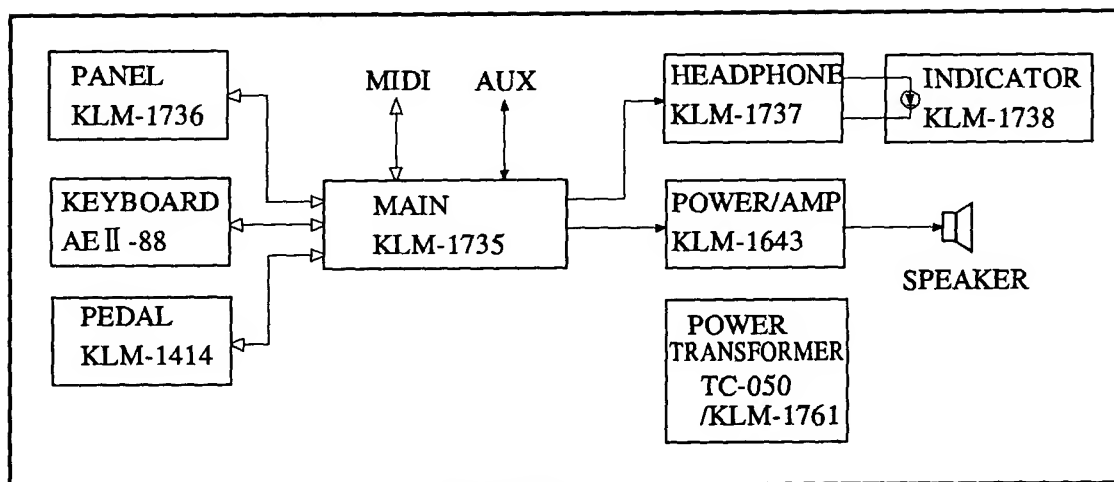
Test step	Output channel	Frequency(Hz)	Selection key
①	L	488	A0
②	R	488	B0

Upon completion of all tests, extract the signal cable from each jack and press the "PIANO" switch to return from the test mode to the normal mode.

7. REFERENCE DATA

HARDWARE SPECIFICATIONS

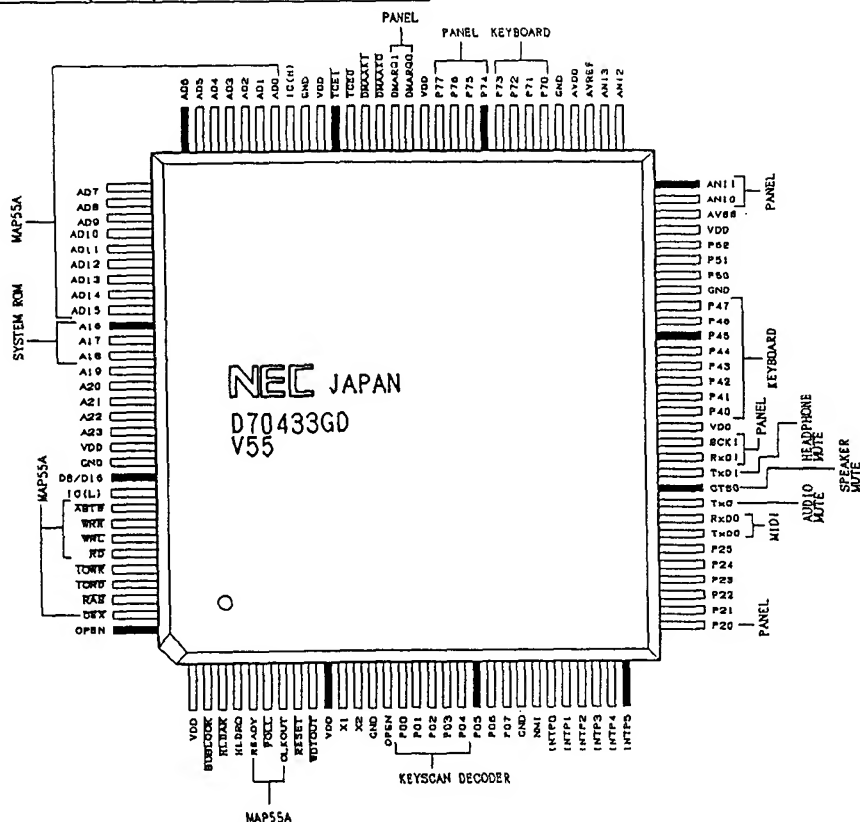
MAIN PCB	:	KLM-1735
PANEL PCB	:	KLM-1736
HEADPHONE PCB	:	KLM-1737
POWER INDICATOR PCB	:	KLM-1738
POWER SUPPLY		
/AMPLIFIRE PCB	:	KLM-1643
POWER TRANSFORMER	:	TC-050
HARNESS RELAY PCB	:	KLM-1761
SPEAKER	:	FF166-J36(16cm) × 2



MAIN ICs

CPU	:	UPD70433GD(V55PI)	IC6
MAP55A	:	MB622E15PF	IC14
TGL	:	MBCS35104E	IC15
SYSTEM ROM	:	UPD27C2001D-15(2M EP_ROM) or MASK ROM	IC11
WAVE ROM	:	UPD23C16000BGX-871(16M MASK_ROM)	IC7
SRAM	:	UPD43256AGU-10/12L-E2(256K SRAM)	IC13
DRAMs	:	TC511664BJ-80(1M DRAM)	IC19
		MB81464-10PSZ-G-BB-RS2(256K DRAM)	IC22
DAC	:	TDA1305T/N2-T	IC20

UPD70433GD-5BB(CPU) PIN ASSIGNMENT

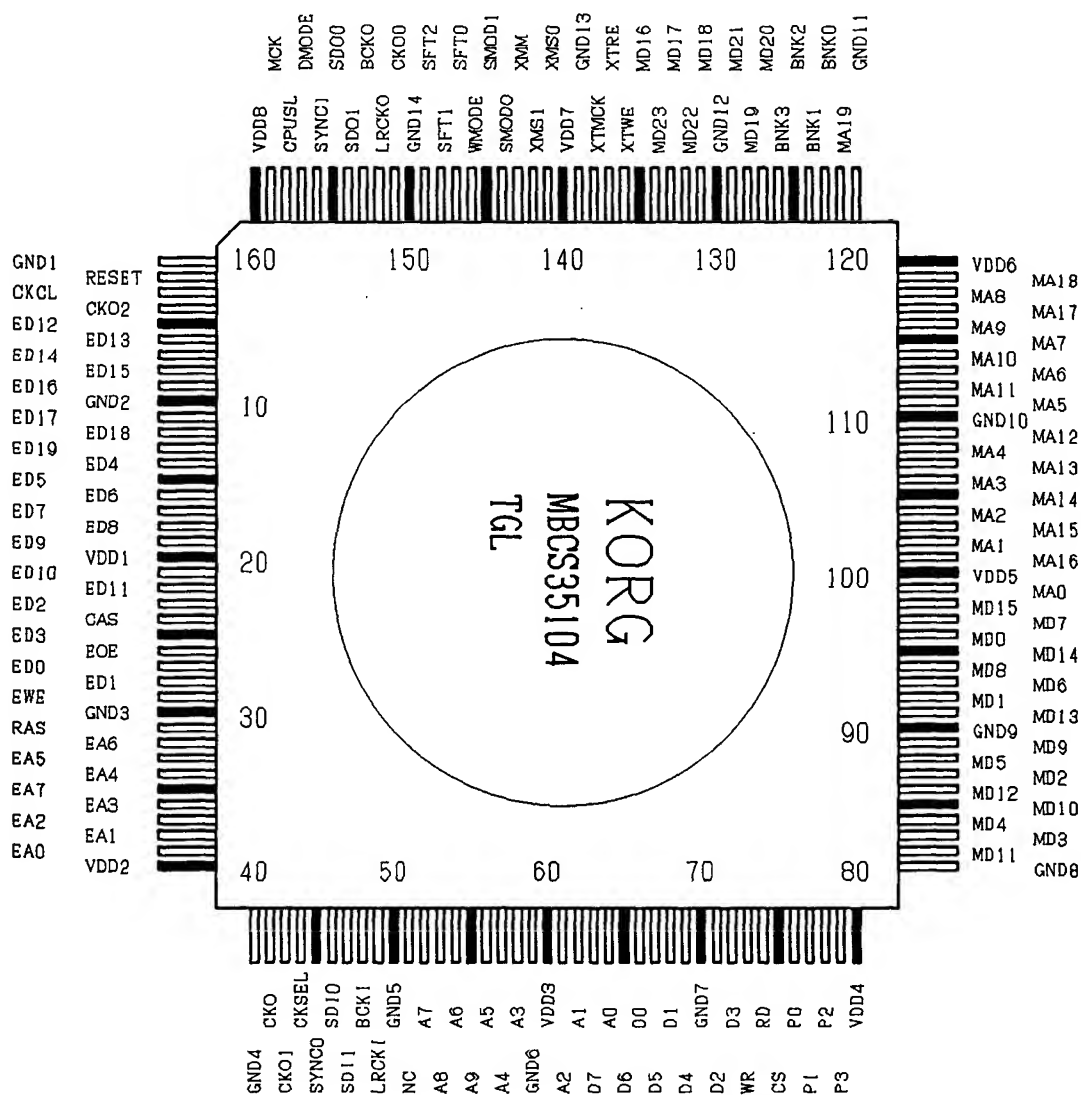


UPD70433GD-5BB(CPU) PIN FUNCTION

PIN NAME	I/O	FUNCTION
P00-P07	I/O	PORT 0
NMI	I	NON MASKABLE INTERRUPT
INTP0-INTP5	I	EXTERNAL INTERRUPT REQUEST
P20-P21	I/O	PORT 2
TXD0-TXD1	O	TRANSMIT DATA OUTPUT
RXD0-RXD1	I	RECEIVE DATA INPUT
TXC	O	TRANSMIT CLOCK OUTPUT
CTS0	I	ENABLING SIGNAL INPUT
SCK1	O	SIRIAL CLOCK OUTPUT
P40-P47	I/O	PORT 4
P50-P52	I/O	PORT 5
ANI0-ANI3	I	ANALOG SIGNAL INPUT
P70-P77	I/O	PORT 7
DMARQ0-1	I	DMA REQUEST SIGNAL INPUT
GND	---	GROUND
VDD	---	+5V POTENTIAL
AVSS	---	ANALOG GROUND
AVDD	---	ANALOG +5V POTENTIAL
AVREF	I	REFERENCE POTENTIAL INPUT FOR A/D CONVERTER
RESET	I	SYSTEM RESET SIGNAL INPUT
X1, X2	I	SYSTEM CLOCK INPUT
CLKOUT	O	SYSTEM CLOCK OUTPUT
ASTB	O	ADDRESS STROBE SIGNAL OUTPUT
RD	O	DATA READ STROBE SIGNAL OUTPUT
WRL	O	LOW BIT DATA WRITE STROBE SIGNAL OUTPUT
WRH	O	HIGHT BIT DATA WRITE STROBE SIGNAL OUTPUT

PIN NAME	I/O	FUNCTION
READY	I	READY SIGNAL INPUT
DEX	O	DATA BUS ENABLE SIGNAL OUTPUT
RAS	O	DRAM ROW ADDRESS LATCH TIMMING SIGNAL OUTPUT
D8/D16	I	BUS SIZE SELECT INPUT
BUSLOCK	O	BUS LOCK SIGNAL OUTPUT
POLL	I	POLL SIGNAL INPUT
HLDRQ	I	BUS HOLD REQUEST SIGNAL INPUT
HLDK	O	BUS HOLD ACKNOWLEDGE SIGNAL OUTPUT
AD0-AD15	I/O	ADDRESS/DATA SIGNAL
A16-A23	O	ADDRESS SIGNAL OUTPUT
IORD	O	I/O READ STROBE SIGNAL OUTPUT
IOWR	O	I/O WRITE STROBE SIGNAL OUTPUT
DMAAK0-1	O	DMA ACKNOWLEDGE SIGNAL OUTPUT
TCE0-TCE1	O	DMA FINISH SIGNAL OUTPUT

MBCS35104 (TGL) PIN ASSIGNMENT



MBCS35104 (TGL) PIN FUNCTION

PIN NAME	I/O	FUNCTION
VDD	---	+5V
VSS	---	Ground
Rest	I	System Rest
MCK	I	Master Clock
CKO	O	32MHz
CKO0-1	O	CLK/2 duty 50% output
CKO2	O	CLK/4 duty 50% output
CKSEL	I	Phase Analog Select for CKO0
CKCL	I	CKO0 Reset input
XMM	I	for Test mode
XMS2-0	I	for Test mode
XTMCK	I	for Test mode
XTRE	I	for Test mode
XTWE	I	for Test mode

for CPU		
CPUSL	I	CPU select V25/H8
CS	I	Chip select
WR	I	CPU WRITE pulse
RD	I	CPU READ pulse
A0-9	I	CPU Address Bus
D0-9	I/O	CPU Data Bus
P0-3	O	Output Port

for PCM ROM		
MD0-15	I/O	PCM Memory Data Bus 0-15
MD16-23	I	PCM Memory Data Bus 16-23 (for 2TGs mode)
MA0-19	O	PCM Memory Address Bus
BNK0-3	O	PCM Memory Bank Select
DMODE	I	DECODE Mode Select H: Decode BNK# L: Thru BNK#
WMODE	I	PCM Memory -word Select H: 64 osc. , 2TGs Mode L: 32 osc. , 1TG Mode
SYNCO	O	Counter Synchro Output (only 2TGs Mode)
SYNCI	I	Counter Synchro Input (only 2TGs Mode)

for Serial Interface		
SDO0-1	O	Serial Data Outout 0,1 SDO0: C ch & D ch SDO1: A ch & B ch
BCKO	O	Bit Clock Output (2MHz, 500nsec.)
LRCKO	O	LR Clock Output L: R ch H: L ch
SDI0-1	I	Serial Data Input 0,1 SDI0: C ch & D ch SDI1: A ch & B ch
BCKI	I	Bit Clock Input (2MHz, 500nsce.)
LRCKI	I	LR Clock Input L: R ch H: L ch
SMOD0-3	I	Serial I/F Format Select

for DRAM -----		
EA0-7	O	DRAM Address
ED0-19	I/O	DRAM Data
EWE	O	DRAM WE
EOE	O	DRAM OE
RAS	O	DRAM RAS
CAS	O	DRAM CAS

TGL check points

1. Voltage check of power supply

Check that a voltage of +5V ($\pm 5\%$) is input at the VDD pin.

$$4.75V \leq VDD \leq 5.25V$$

2. Check of input/output pins, regardless of the CPU interface setting

PIN NAME	FUNCTION
BCKO	2.0 MHz bit clock signal outputs to the D/A converter.
LRCKO	31.25 KHz L/R clock signal output to the D/A converter.

If the voltage level of these pins is +3V or less, check the soldering of peripheral pins and the voltage of the connected device.
Also, if any of these pins is 0V or +5V, check to see whether RESET(TGRES) or the master clock(32.0MHz) has been input. If RESET and MCK are normal, and the test mode setting pins have been set as below, check the soldering and the pattern on the circuit board.

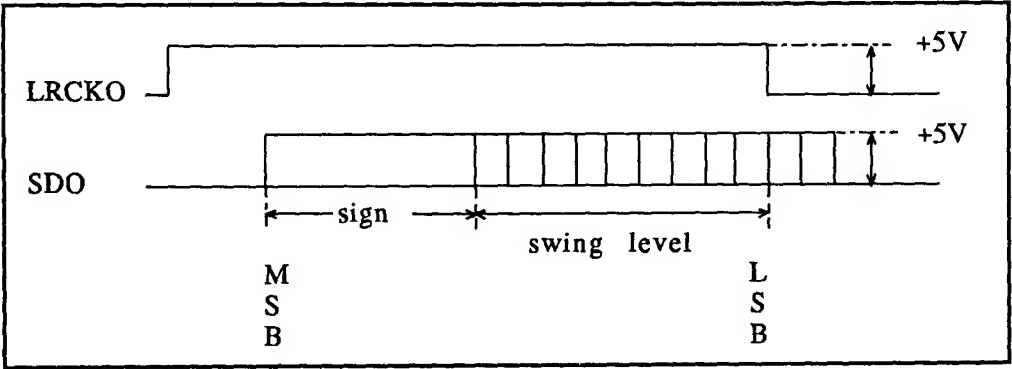
3. Check of input/output pins, when the key on

PIN NAME	FUNCTION
XCS, XWE	Control signal from the CPU

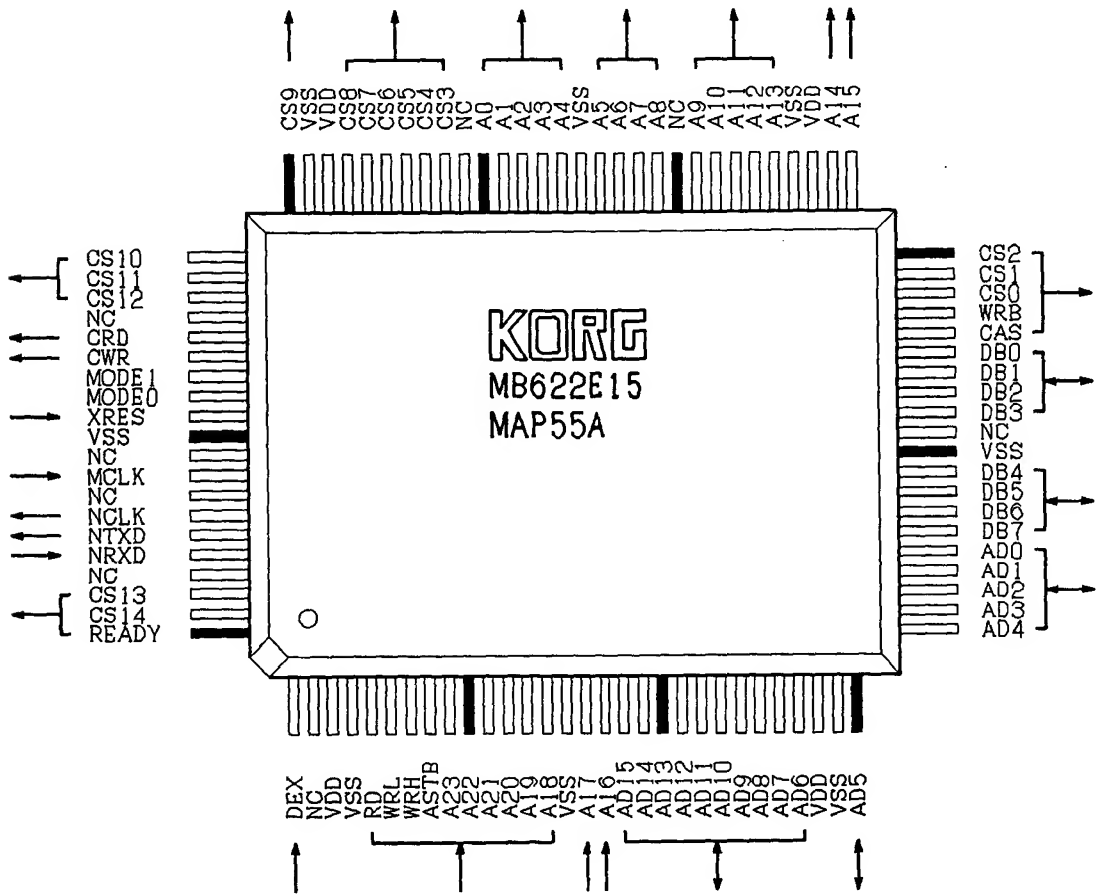
During KEY ON or PROG. CHANGE, check that a low level pulse signal is input from the CPU to the above pins(XSC, XWE). If these signals cannot be observed with the oscilloscope, check the CPU and its peripheral circuits.

PIN NAME	FUNCTION
SDO0, SDO1	serial data output to the D/A converter

In case of observing the waveform with the oscilloscope, it is best to input the LRCK0 clock signal to the external trigger input of the oscilloscope. If the serial data cannot be output, check the PCM address bus. To find whether normal serial data is output or not, check whether there is a different bit from the code bit at the left side of the leading and the trailing edge of LRCK0 on the oscilloscope screen.



MB622E15 (MAP55A) PIN ASSIGNMENT



MB622E15(MAP55A) PIN FUNCTIONS

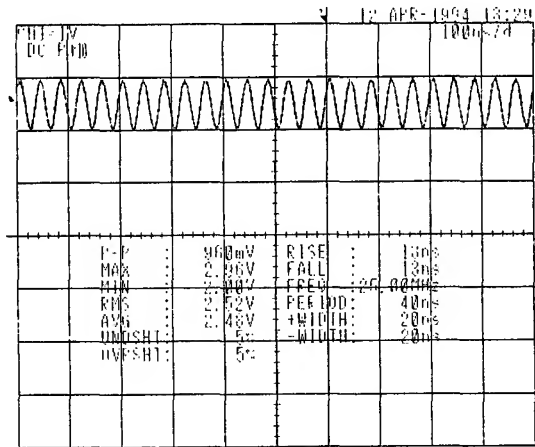
PIN NO	PIN NAME	I/O	FUNCTION
1	DEX	I	V55 DEX INPUT
5	RD	I	V55 RD INPUT
6	WRL	I	V55 WRL INPUT
7	WRH	I	V55 WRH INPUT
8	ASTB	I	V55 ASTB INPUT
9-14	A23-18	I	ADDRESS INPUT A23-16
16,17	A17-16	I	
18-27	AD15-6	I/O	MULTIPLEX DATA BUS A15-0
30-35	AD5-0	I/O	
36-39	DB7-4	I/O	8BIT DATA BUS
42-45	DB3-0	I/O	
46	CAS	O	DRAM CAS OUTPUT
47	WRB	O	WRITE PULSE OUTPUT
48-50	CS0-2	O	CHIP SELECT OUTPUT
51,52	A15,14	O	ADDRESS LATCH OUTPUT
55-59	A13-9	O	
62-64	A8-6	O	
66-71	A5-0	O	
72-77	CS3-8	O	CHIP SELECT OUTPUT
80-83	CS9-12	O	
85	CRD	O	VDC READ PULSE OUTPUT
86	CWR	O	VDC WRITE PULSE OUTPUT
87,88	MODE1-0	I	DECODE MODE SELECT
89	XRES	I	SYSTEM RESET INPUT
92	MCLK	I	MASTER CLOCK INPUT
94	NCLK	O	SERIAL I/F CLOCK OUTPUT
95	NTXD	O	SERIAL I/F TRANSMIT DATA OUTPUT
96	NRXD	I	SERIAL I/F RECIEVE DATA INPUT
98,99	CS13,14	O	CHIP SELECT OUTPUT
100	READY	O	V55 READY OUTPUT

CHECK POINTS

1. Crystal OSC. - CPU

From X1(SX-1)
To 11pin(X1) of IC6

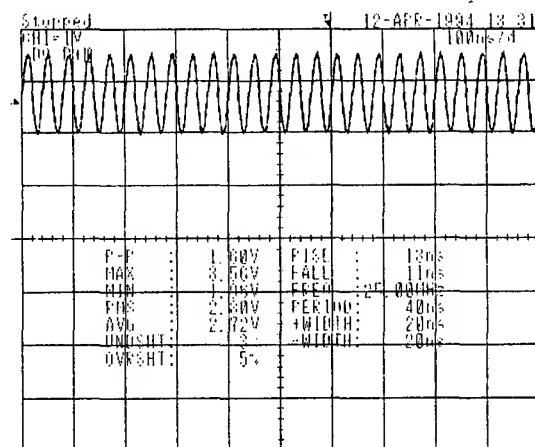
f=25.00MHz



2. Crystal OSC. - CPU

From X1(SX-1)
To 12pin(X2) of IC6

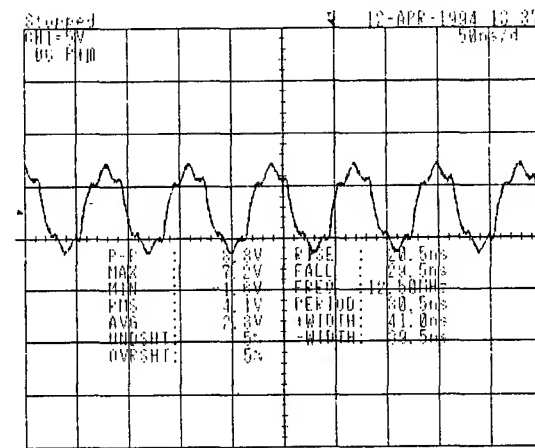
f=25.00MHz



3. CPU - MAP55A

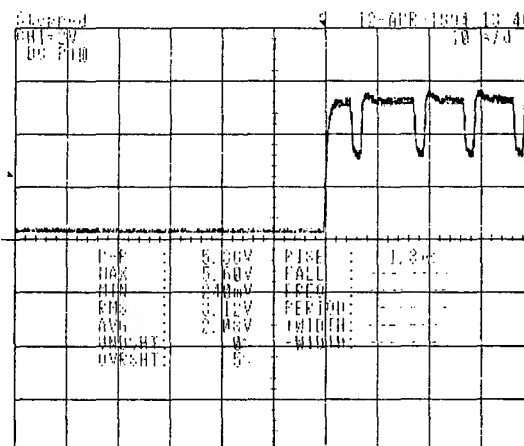
From 7pin(CLKOUT) of IC6
To 92pin(MCLK) of IC14

f=12.50MHz



4. RESET - CPU/MAP55A

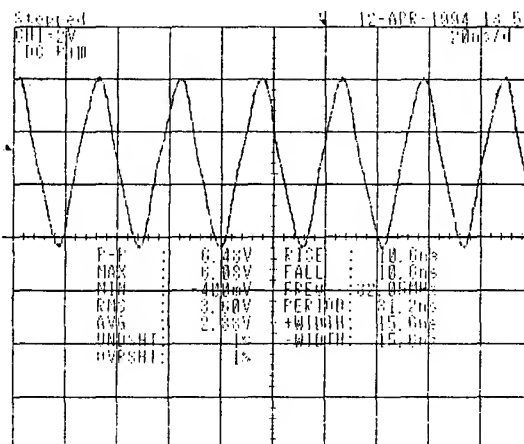
From 7pin(RES) of IC9
To 8pin(RESET) of IC6
and 89pin(XRES) of IC14



5. CLOCK circuit - TGL

From 4pin of IC16
To 159pin(MCK) of IC15

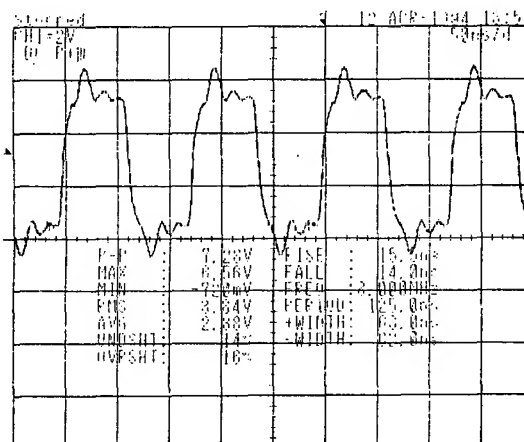
$f=32.00\text{MHz}(1024\text{FS})$



6. TGL - DAC

From 4pin(CKO2) of IC15
To 12pin(XIN) of IC20

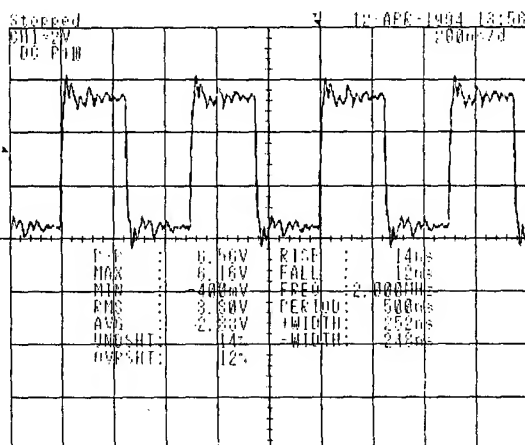
$f=8.00\text{MHz}(256\text{FS})$



7. TGL - DAC/CLOCK circuit

From 153pin(BCKO) of IC15
To 4pin(BCK) of IC20,
8pin(CLOCK) of IC17
and 13pin of IC23

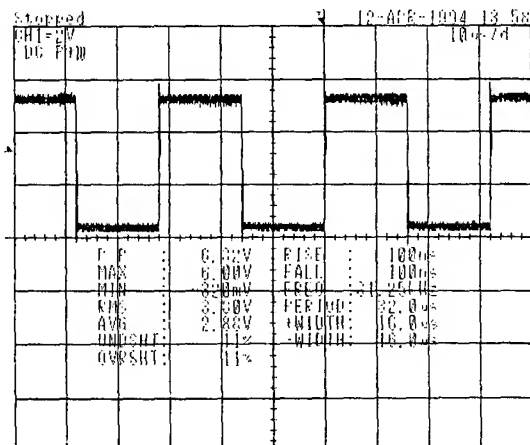
$f=2.00\text{MHz}$



8. TGL - DAC

From 152pin(LRCKO) of IC15
To 5pin(WS) of IC20
through IC17 and IC18

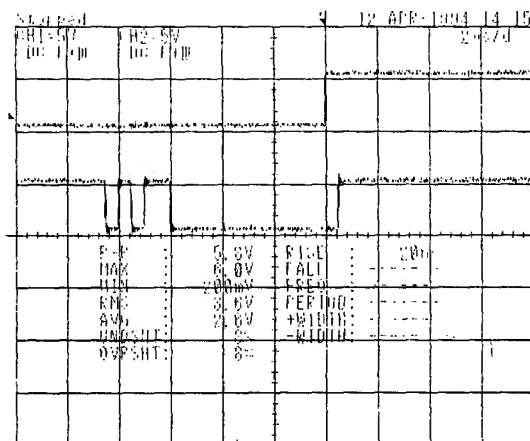
$f=31.25\text{kHz}$



9. TGL - DAC

From 154pin(SDO1) of IC15
To 6pin(DATA) of IC20

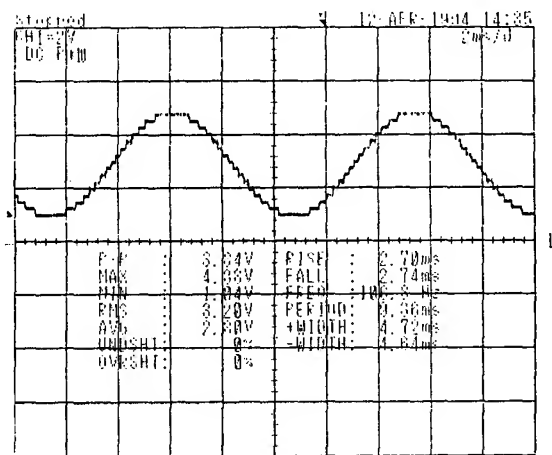
CH1: WS(LRCKO)
CH2: DATA(SDO1)



10. DAC - analog circuit

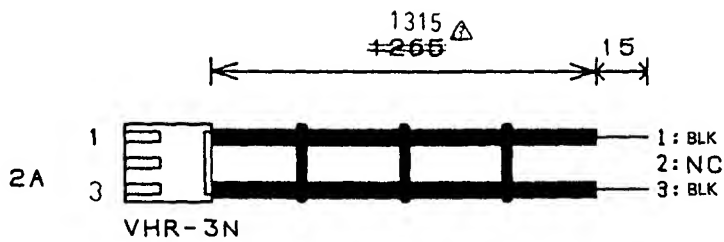
From 7pin of IC21
To analog circuit(KLM-1736)

* When MDE TEST waveform

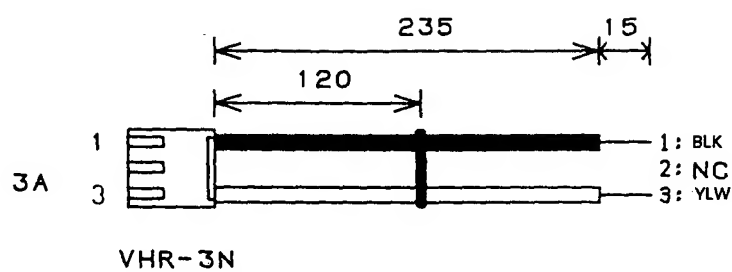


FOR HARNESS

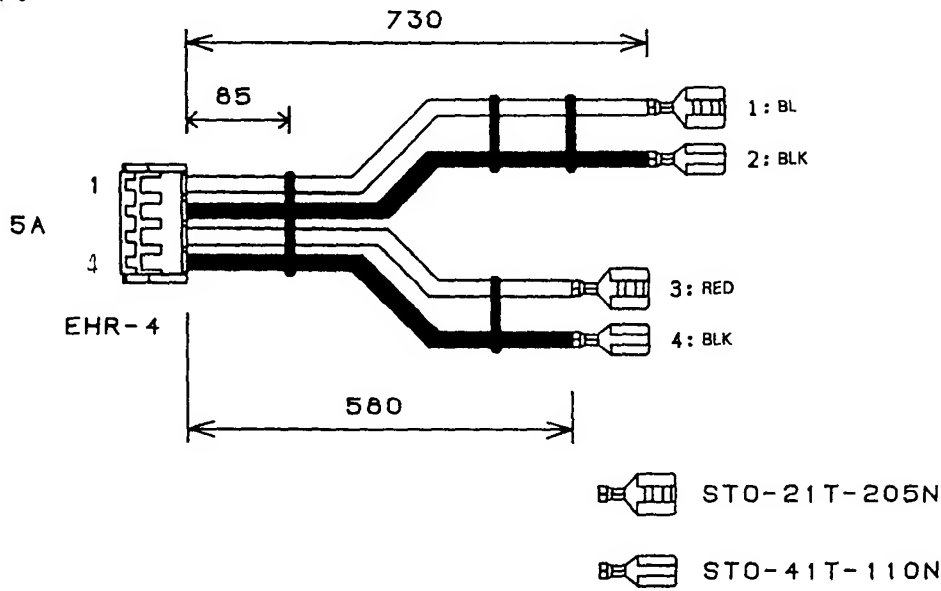
HNS-2003
(AMP-P.SW)



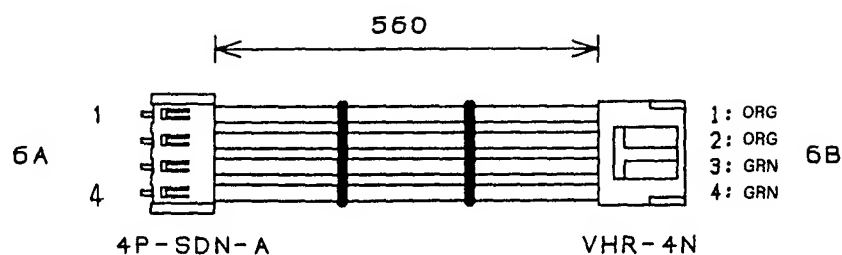
HNS-2004
(AMP.-TRANS<Pr1.>)



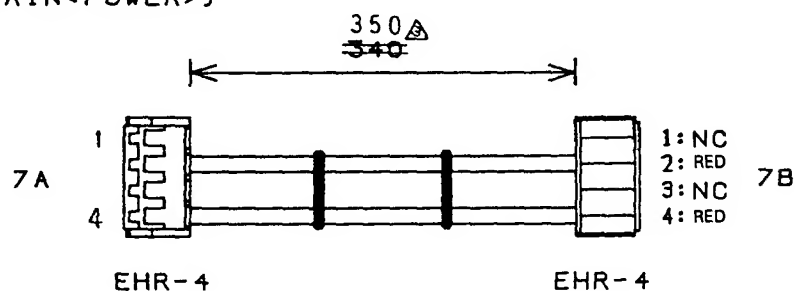
HNS2005
(AMP-SP)



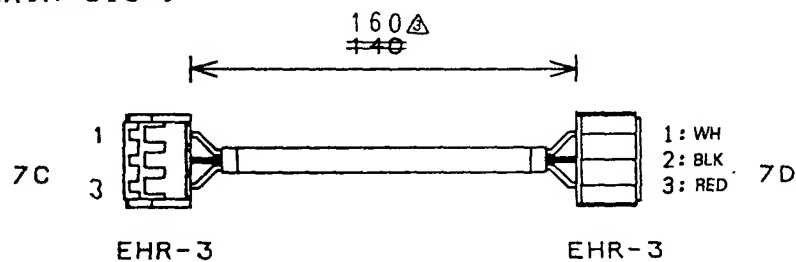
HNS-2006
(KLM1751-MAIN)



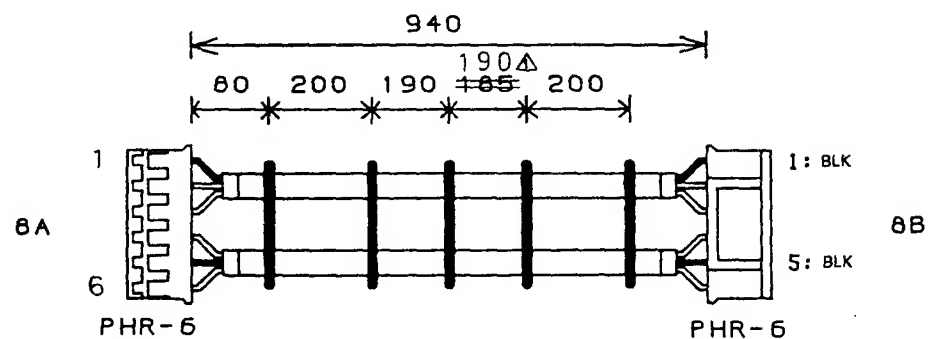
HNS-2007
(AMP-MAIN<POWER>)



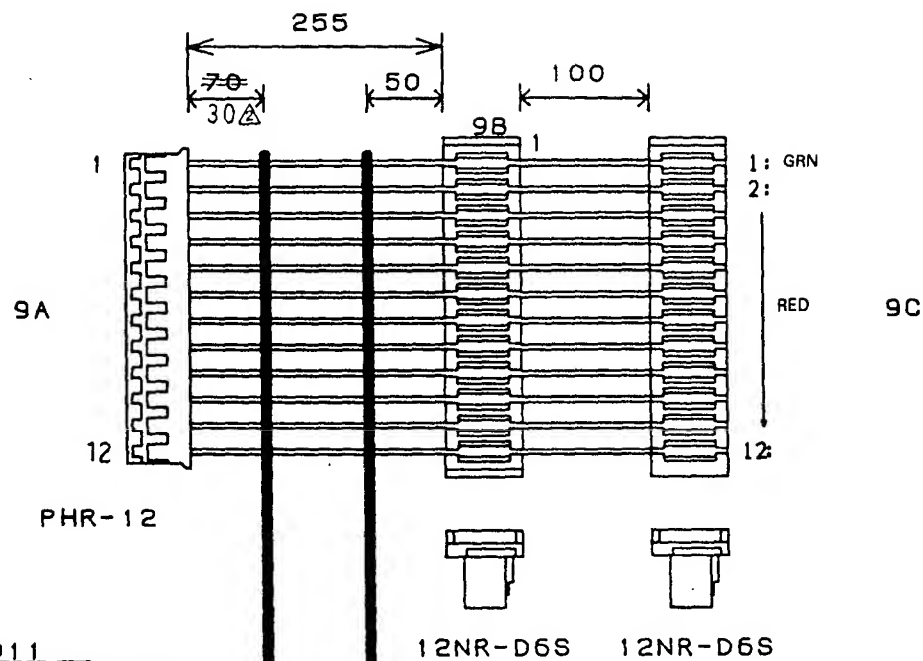
HNS-2008
(AMP-MAIN<SIG>)



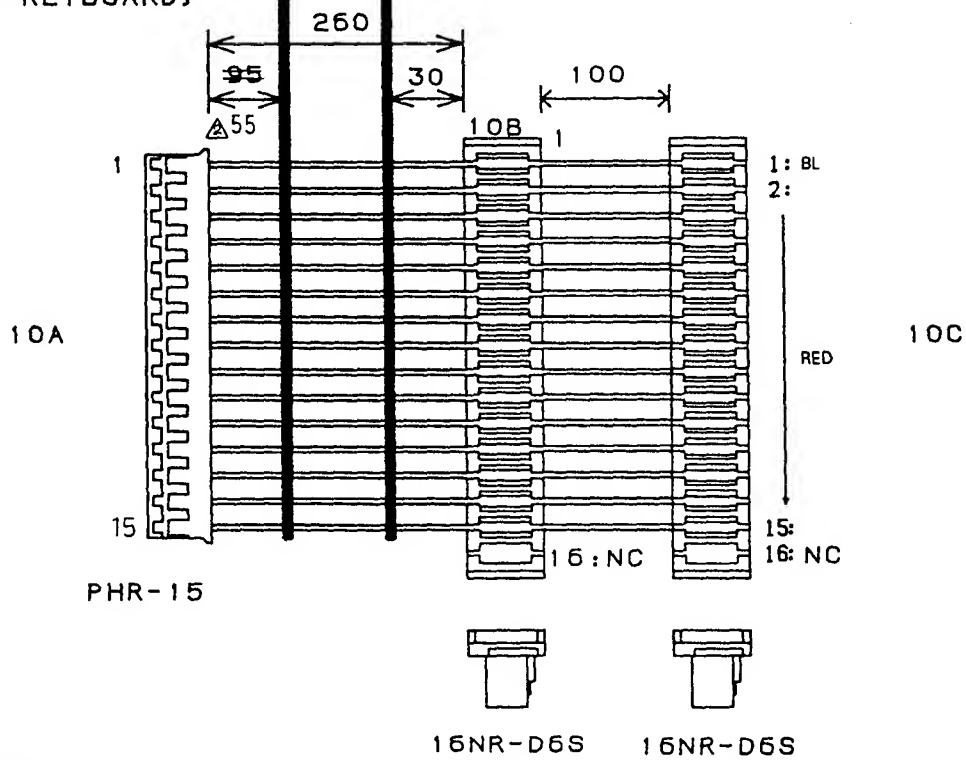
HNS-2009
(MAIN-HEADPHONE)



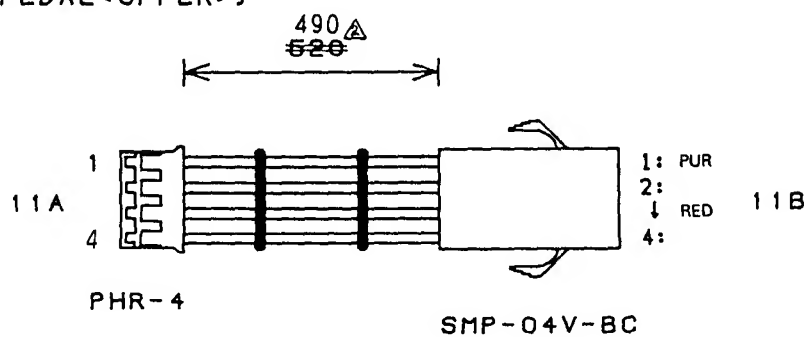
HNS-2010
(MAIN-KEYBOARD)



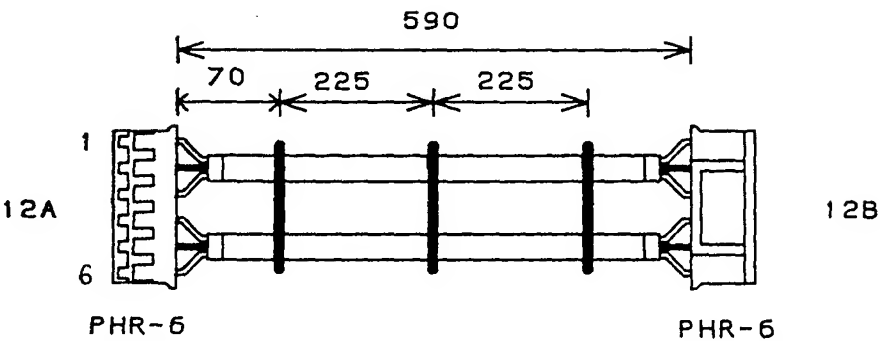
HNS-2011
(MAIN-KEYBOARD)



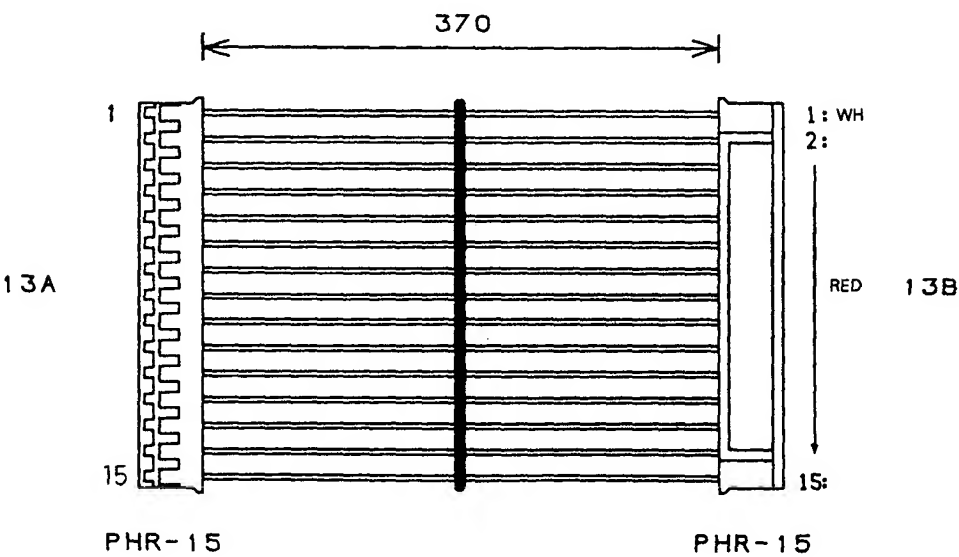
HNS-2012
(MAIN-PEDAL<UPPER>)



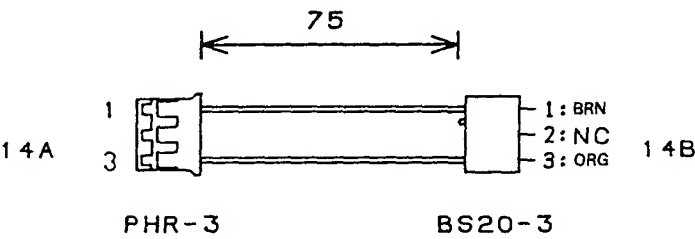
HNS-2013
(MAIN-PANEL<MASTER VOL.>)



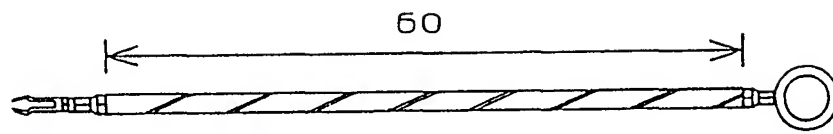
HNS-2014
(MAIN-PANEL<SW>)



HNS-2015
(HEADPHONE-LED)



HNS-1843
(ALL:GND LINE OF AMP.)



SIN-21T-1.8

~~GRA-21T-3.7~~
SRB-51T-3.7 \triangle

8. PARTS LIST

FOR C-303

PART CODE	PART NAME/IDENTIFICATION	P.C.BOARD	NOTE	Q'TY
001164300	P.C.BOARD ASSEMBLY KLM-1643	M.PART	AMP&POWER	1
001173500	P.C.BOARD ASSEMBLY KLM-1735	M.PART	MAIN	1
001173600	P.C.BOARD ASSEMBLY KLM-1736	M.PART	PANEL	1
001173700	P.C.BOARD ASSEMBLY KLM-1737/38	M.PART	HEADPHONE/LED	1
300002100	TR 2SA1670	1643		2
302003700	TR 2SC4385	1643		2
310011300	BRIDGE DIODE DBF-20C	1643		1
310011900	BRIDGE DIODE RBA-402	1643		1
312013400	LED GL2PR6	1738		1
312013500	LED TLS226	1736		6
320001180	IC UPC1270H	1643	POWER AMP	2
320001242	IC UPC4570HA	1643	OP_AMP	1
320001328	IC UPD70433GD-5BB	1735	CPU	1
320001511	IC UPD23C16000BGX-871	1735	WAVE_ROM	1
320001512	IC UPD23C2001ECZ-101	1735	MASK_ROM	1
320004108	IC HD74HC138P	1736	HC_MOS	1
320006025	IC MSM51C464A-7/8ZS	1735	DRAM	1
320011151	IC M66310P	1736	LED DRIVER	1
320012141	IC MBCS35104-001PF-G-BND	1735	TGL	1
320012146	IC MB622E15PF-G-LBND	1735	MAP55A	1
320013036	IC PQ05RF2	1643	REGULATOR	1
324001006	IC UPD74HCU04GS-E2 (SOP)	1735	HC_MOS	1
324001011	IC UPD74HC04GS-E2 (SOP)	1735	HC_MOS	1
324001015	IC UPC4570G2-E2 (SOP)	1735	OP_AMP	2
324001037	IC UPD43256AGU-10/12L-E2	1735	S_RAM	1
324003006	IC TC511664BJ-80 EL	1735	D_RAM	1
324004050	IC HD74HC138FPER	1735	HC_MOS	3
324004065	IC HD74HC164FPER	1735	HC_MOS	2
324004176	IC HD74HC05FPER	1735	HC_MOS	1
324009004	IC NJM78L05UA-TE2	1735	REGULATOR	1
324011002	IC M5223FP-600C (8P SOP)	1735	OP_AMP	1
324011004	IC M5216FP-600C-TP3	1735	OP_AMP	1
324011013	IC M62021FP-600C	1735	RESET	1
324013012	IC PQ12SZ5	1735	REGULATOR	2
324038002	IC TDA1305T/N2-T	1735	DAC	1
334000600	PHOTO COUPLER PC-410K-TP	1735		1
335400060	CRYSTAL OSC SX-1 25.000MHZ	1735		1
335400080	CRYSTAL OSC SX-1 32.000MHZ	1735		1
350002210	SEMI FIXED VR RH0615C13J8WA	1643		2
365007800	SLIDE VR RS30111AC00NB 10KB	1736		2
365008000	SLIDE VR RS30112AC00JB 10KBX2	1736		1
375006100	POWER SW SDDLBI	M.PART		1
375010000	TACT SW SKHJAC003A	1736		4
375010600	TACT SW SKHJTQ001A	1736		11
400013800	POWER TRANSFORMER TC-050	M.PART		1
402004600	COIL 2943-666673	1643		4
		1737		4
403001600	RELAY EB2-12-L1	1735		2
404000100	FERRITE BEAD BL03RN2-R62T4-F	1643		1
410004100	SPEAKER FF166-J36 16CM	M.PART		2

PART CODE	PART NAME/IDENTIFICATION	P.C.BOARD	NOTE	Q'TY
420004600	KEYBOARD AEII-88	M.PART		1
454005600	PHONE JACK YKB21-5006	1737		2
454006500	PIN JACK JPJ0730-01-500 (4P)	1735		1
454007700	DIN JACK VF64730 (3P)	1735		1
464002300	FUSE 125V 2A SB2	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	100JP	1
464002500	FUSE 125V 3.15A SB3.15	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	100JP	1
464062201	FUSE 250V T1.6A	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AU	1
		M.PART	240AF	1
		M.PART	230GE	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
		M.PART	240UK	1
464062301	FUSE 250V T2.0A	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AU	1
		M.PART	240AF	1
		M.PART	230GE	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
		M.PART	240UK	1
515002300	FUSE HOLDER S-N5057 #01	1643		4
520001900	LITHIUM BATTERY CR2032-HE2	1735		1
600004200	AC CORD HP-11J/DCB-10	M.PART	100JP	1
600004500	AC CORD DAP-100/DCB-10	M.PART	240AU	1
600004600	AC CORD DEP-101/DCB-10	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AF	1
		M.PART	230GE	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
600005000	AC CORD DP-201/DCB-10	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
600005600	AC CORD DP-610/DCB-10/VH	M.PART	240UK	1
620025100	X-224 POWER SW KNOB NO.3	M.PART		1
620025200	X-224 TACT SW KNOB NO.3	M.PART		15
620025300	X-224 SLIDE VR KNOB NO.2	M.PART		3
629010907	X-921 HINGE CAP KOC-E40296	M.PART		2
640082500	X-526/527 METAL FITTING OF SW	M.PART		1
640084600	GROUNDING CONTACT KOC-C40655	1643		1

PART CODE	PART NAME/IDENTIFICATION	P.C.BOARD	NOTE	Q'TY
641014900	X-921 MUSIC STAND HINGE	M.PART		2
641016500	X-922/923 SHAFT	M.PART		1
641016600	X-921 BUSHING PLATE	M.PART		1
641026200	X-122 SHIELD CHASSIS (LARGE)	M.PART		1
641026204	X-122 HINGE 2	M.PART		3
641026205	X-122 SIDE CHASSIS L	M.PART		1
641026206	X-122 SIDE CHASSIS R	M.PART		1
641026210	X-122 HEAT SINK ANGLE L	M.PART		1
641026211	X-122 HEAT SINK ANGLE R	M.PART		1
641026900	X-122 L TYPE ANGLE (LARGE)	M.PART		2
641026901	X-122 L TYPE ANGLE (SMALL)	M.PART		1
641030400	X-120 PANEL SUPPORT	M.PART		2
641031300	X-120 STOPPER PLATE	M.PART		6
641031400	X-120 SPRING STOPPER 3	M.PART		1
641031500	X-120 HOLDER SPRING V3	M.PART		1
641032100	X-122 FRONT BAR SPACER	M.PART		1
641036000	KORG LOGOTYPE PLATE	M.PART		1
641041112	X-352 TOP PLATE 6 ASSY H30049	M.PART		1
641041114	X-352/3 KEYCOVER PANEL A ASSY	M.PART		1
641041115	X-352/3 KEYCOVER PANEL B ASSY	M.PART		1
641041116	X-352 FRONT PANEL ASSY 30051-1	M.PART		1
641041118	X-352/3 FRONT BAR 3W C10140	M.PART		1
641041119	X-352/3 SPEAKER NET ASSY 30056	M.PART		2
641041120	X-352/3 PEDAL PLATE KOC-C40936	M.PART		1
641041121	X-352/3 HEAT SINK (S) 2 C40937	1643		1
641041122	X-352/3 PHONE JACK CHASSIS 2P	M.PART		1
<hr/>				
645017100	X-352/3 MUSIC PLATE (CONCERT)	M.PART	100JP	1
645017200	X-353 WOODEN KEYCOVER 3 D10063	M.PART		1
645017300	X-352/3 BOTTOM PLATE D10064	M.PART		1
645017400	X-352/3 MUSIC PLATE (C PIANO)	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AU	1
		M.PART	240AF	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
		M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	240UK	1
<hr/>				
646035900	X-922 GEAR	M.PART		2
646041200	X-121 RACK 1 L	M.PART		1
646041201	X-121 RACK 1 R	M.PART		1
646041500	SHAFT COLLAR	M.PART		2
646043800	X-224 SLIDE VR ESCUSHION 30 NO.2	M.PART		3
646047900	X-357 SIDE PLATE L NO.2	M.PART		1
646047901	X-357 SIDE PLATE R NO.2	M.PART		1

FOR C-505

PART CODE	PART NAME/IDENTIFICATION	P.C.BOARD	NOTE	Q'TY
001164300	P.C.BOARD ASSEMBLY KLM-1643	M.PART	AMP&POWER	1
001173500	P.C.BOARD ASSEMBLY KLM-1735	M.PART	MAIN	1
001173600	P.C.BOARD ASSEMBLY KLM-1736	M.PART	PANEL	1
001173700	P.C.BOARD ASSEMBLY KLM-1737/38	M.PART	HEADPHONE/LED	1
300002100	TR 2SA1670	1643		2
302003700	TR 2SC4385	1643		2
310011300	BRIDGE DIODE DBF-20C	1643		1
310011900	BRIDGE DIODE RBA-402	1643		1
312013400	LED GL2PR6	1738		1
312013500	LED TLS226	1736		6
320001180	IC UPC1270H	1643	POWER AMP	2
320001242	IC UPC4570HA	1643	OP_AMP	1
320001328	IC UPD70433GD-5BB	1735	CPU	1
320001511	IC UPD23C16000BGX-871	1735	WAVE_ROM	1
320001512	IC UPD23C2001ECZ-101	1735	MASK_ROM	1
320004108	IC HD74HC138P	1736	HC_MOS	1
320006025	IC MSM51C464A-7/8ZS	1735	D_RAM	1
320011151	IC M66310P	1736	LED DRIVER	1
320012141	IC MBCS35104-001PF-G-BND	1735	TGL	1
320012146	IC MB622E15PF-G-LBND	1735	MAP55A	1
320013036	IC PQ05RF2	1643	REGULATOR	1
324001006	IC UPD74HCU04GS-E2 (SOP)	1735	HC_MOS	1
324001011	IC UPD74HC04GS-E2 (SOP)	1735	HC_MOS	1
324001015	IC UPC4570G2-E2 (SOP)	1735	OP_AMP	2
324001037	IC UPD43256AGU-10/12L-E2	1735	S_RAM	1
324003006	IC TC511664BJ-80 EL	1735	D_RAM	1
324004050	IC HD74HC138FPER	1735	HC_MOS	3
324004065	IC HD74HC164FPER	1735	HC_MOS	2
324004176	IC HD74HC05FPER	1735	HC_MOS	1
324009004	IC NJM78L05UA-TE2	1735	REGULATOR	1
324011002	IC M5223FP-600C (8P SOP)	1735	OP_AMP	1
324011004	IC M5216FP-600C-TP3	1735	OP_AMP	1
324011013	IC M62021FP-600C	1735	RESET	1
324013012	IC PQ12SZ5	1735	REGULATOR	2
324038002	IC TDA1305T/N2-T	1735	DAC	1
334000600	PHOTO COUPLER PC-410K-TP	1735		1
335400060	CRYSTAL OSC SX-1 25.000MHZ	1735		1
335400080	CRYSTAL OSC SX-1 32.000MHZ	1735		1
350002210	SEMI FIXED VR RH0615C13J8WA	1643		2
365007800	SLIDE VR RS30111AC00NB 10KB	1736		2
365008000	SLIDE VR RS30112AC00JB 10KBX2	1736		1
375006100	POWER SW SDDL1643A	M.PART		1
375010000	TACT SW SKHJAC003A	1736		4
375010600	TACT SW SKHJTQ001A	1736		11
400013800	POWER TRANSFORMER TC-050	M.PART		1
402004600	COIL 2943-666673	1643		4
		1737		4
403001600	RELAY EB2-12-L1	1735		2
404000100	FERRITE BEAD BL03RN2-R62T4-F	1643		1
410004100	SPEAKER FF166-J36 16CM	M.PART		2

PART CODE	PART NAME/IDENTIFICATION	P.C.BOARD	NOTE	Q'TY
420004600	KEYBOARD AEII-88	M.PART		1
454005600	PHONE JACK YKB21-5006	1737		2
454006500	PIN JACK JPJ0730-01-500 (4P)	1735		1
454007700	DIN JACK VF64730 (3P)	1735		1
464002300	FUSE 125V 2A SB2	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	100JP	1
464002500	FUSE 125V 3.15A SB3.15	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	100JP	1
464062201	FUSE 250V T1.6A	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AU	1
		M.PART	240AF	1
		M.PART	230GE	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
		M.PART	240UK	1
464062301	FUSE 250V T2.0A	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AU	1
		M.PART	240AF	1
		M.PART	230GE	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
		M.PART	240UK	1
515002300	FUSE HOLDER S-N5057 #01	1643		4
520001900	LITHIUM BATTERY CR2032-HE2	1735		1
600004200	AC CORD HP-11J/DCB-10	M.PART	100JP	1
600004500	AC CORD DAP-100/DCB-10	M.PART	240AU	1
600004600	AC CORD DEP-101/DCB-10	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AF	1
		M.PART	230GE	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
600005000	AC CORD DP-201/DCB-10	M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
600005600	AC CORD KP610/DCB-10/VH	M.PART	240UK	1
620025100	X-224 POWER SW KNOB NO.3	M.PART		1
620025200	X-224 TACT SW KNOB NO.3	M.PART		15
620025300	X-224 SLIDE VR KNOB NO.2	M.PART		3
629010907	X-921 HINGE CAP KOC-E40296	M.PART		2
640082500	X-526/527 METAL FITTING OF SW	M.PART		1
640084600	GROUNDING CONTACT KOC-C40655	1643		1

PART CODE	PART NAME/IDENTIFICATION	P.C.BOARD	NOTE	Q'TY
641014900	X-921 MUSIC STAND HINGE	M.PART		2
641016500	X-922/923 SHAFT	M.PART		1
641016600	X-921 BUSHING PLATE	M.PART		1
641026200	X-122 SHIELD CHASSIS (LARGE)	M.PART		1
641026204	X-122 HINGE 2	M.PART		3
641026205	X-122 SIDE CHASSIS L	M.PART		1
641026206	X-122 SIDE CHASSIS R	M.PART		1
641026210	X-122 HEAT SINK ANGLE L	M.PART		1
641026211	X-122 HEAT SINK ANGLE R	M.PART		1
641026900	X-122 L TYPE ANGLE (LARGE)	M.PART		2
641026901	X-122 L TYPE ANGLE (SMALL)	M.PART		1
641030400	X-120 PANEL SUPPORT	M.PART		2
641031300	X-120 STOPPER PLATE	M.PART		6
641031400	X-120 SPRING STOPPER 3	M.PART		1
641031500	X-120 HOLDER SPRING V3	M.PART		1
641032100	X-122 FRONT BAR SPACER	M.PART		1
641036000	KORG LOGOTYPE PLATE	M.PART		1
641041111	X-353 REAR PANEL 4 KOC-C10139	M.PART		1
641041113	X-353 GRILL 3 ASSY KOC-H30050	M.PART		1
641041114	X-352/3 KEYCOVER PANEL A ASSY	M.PART		1
641041115	X-352/3 KEYCOVER PANEL B ASSY	M.PART		1
641041117	X-353 FRONT PANEL ASSY 30051-2	M.PART		1
641041118	X-352/3 FRONT BAR 3W C10140	M.PART		1
641041119	X-352/3 SPEAKER NET ASSY 30056	M.PART		2
641041120	X-352/3 PEDAL PLATE KOC-C40936	M.PART		1
641041121	X-352/3 HEAT SINK (S) 2 C40937	1643		1
641041122	X-352/3 PHONE JACK CHASSIS 2P	M.PART		1
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645017000	X-353 TOP PLATE 3 KOC-D10062	M.PART		1
645017100	X-352/3 MUSIC PLATE (CONCERT)	M.PART	100JP	1
645017200	X-353 WOODEN KEYCOVER 3 D10063	M.PART		1
645017300	X-352/3 BOTTOM PLATE D10064	M.PART		1
645017400	X-352/3 MUSIC PLATE (C PIANO)	M.PART	220GE	1
		M.PART	240GE	1
		M.PART	240AU	1
		M.PART	240AF	1
		M.PART	230FR	1
		M.PART	230SE	1
		M.PART	230WG	1
		M.PART	230SC	1
		M.PART	117US	1
		M.PART	117CN	1
		M.PART	117EX	1
		M.PART	240UK	1
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646035900	X-922 GEAR	M.PART		2
646041200	X-121 RACK 1 L	M.PART		1
646041201	X-121 RACK 1 R	M.PART		1
646041500	SHAFT COLLAR	M.PART		2
646043800	X-224 SLIDE VR ESCUSHION30NO.2	M.PART		3
646048000	X-353 SIDE PLATE 2 L NO.2	M.PART		1
646048001	X-353 SIDE PLATE 2 R NO.2	M.PART		1

VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan
tyyppiin. Hävitä käytetty paristo valmistajan ohjeiden
mukaisesti.

ADVARSEL!

Lithiumbatteri – Eksplosionsfare ved fejlagtig handling.
Udskiftning må kun ske med batteri af samme
fabrikat og type.
Levér det brugte batteri tilbage til leverandør ren.

ADVERSEL

Lithiumbatteri – Eksplosjonsfare.
Ved utskifting benyttes kun batteri som
• anbefalt av apparatfabrikanten.
Brukt batteri returneres apparatleverandør ren.

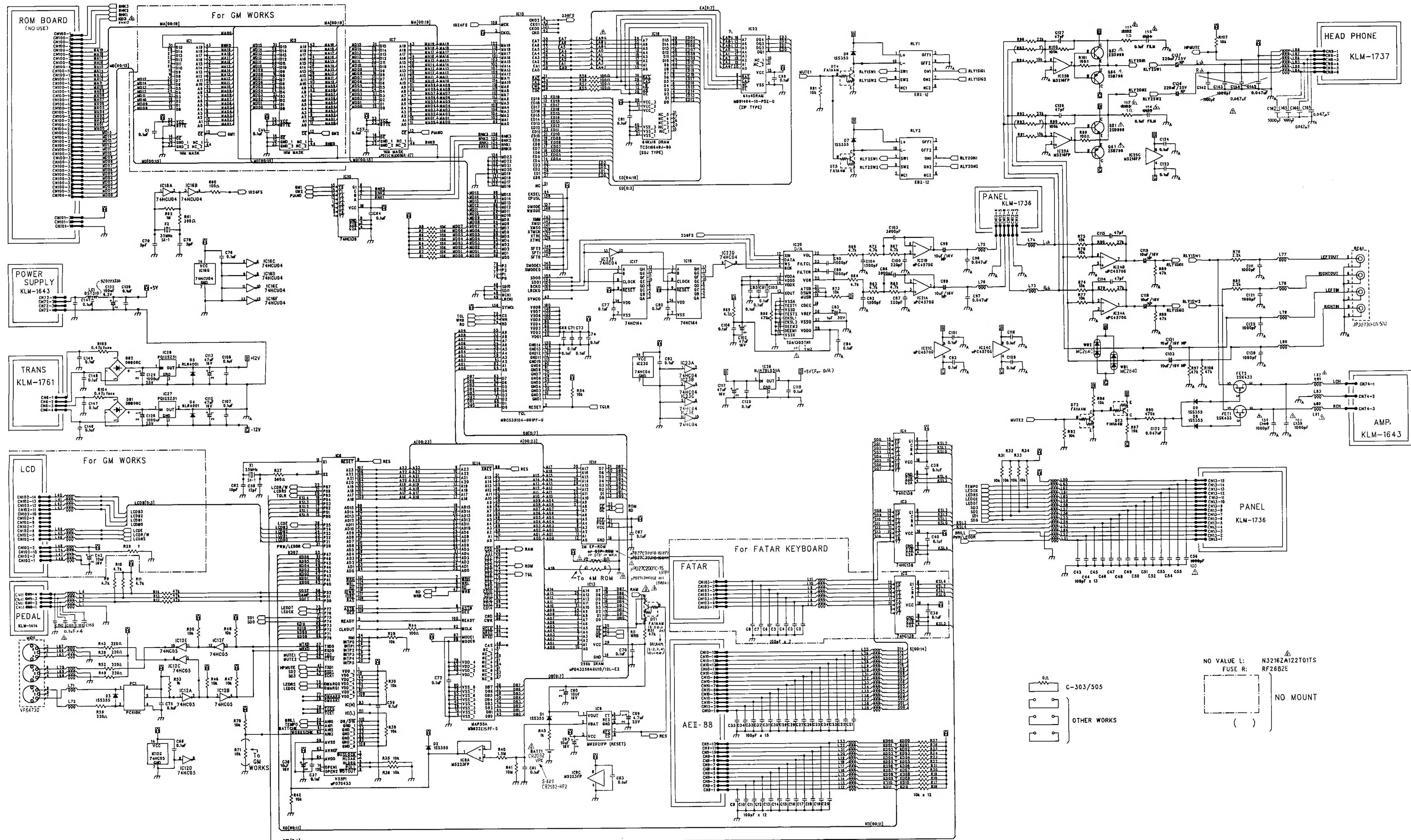
VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en ekvivalent typ som
rekommenderas av apparattillverkaren.
Kassera använt batteri enligt fabrikantens instruktion.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type
recommended by the equipment manufacturer.
Discard used batteries according to manufacturer's
instructions.

KLM-1735



KORG

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